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It's Easy to Find the Service Data Folder You Need

CUMULATIVE INDEX No. 5 TO HOWARD W. PHOTOFACT SAMS & CO., INC. Radio Service Data Folders

SETS NOS. 1 THROUGH 30—DECEMBER 1, 1947

VALUABLE KEEP THIS INDEX HANDY

HOW TO USE THIS INDEX: To find the PHOTOFACT Folder you need, look for the name of the receiver in the alphabetical listing below. Then find the required model number under the receiver name. Opposite the model you will find the number of the Set in which it appears and the Folder number. For example, under *ADMIRAL*, Chassis 3A1, the reference is **2**—462-24. The bold **2** identifies the PHOTOFACT Set number in which the Folder appears. The light face numbers, 462-24, identify the individual Folder.

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The PHOTOFACT Servicer

DECEMBER 12, 1947 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ VOL. 3, No. 30

ROBERT M. ELLIS, *Editor*

IN REVIEW

In sending this issue to press, we are reminded that PHOTOFACT Folder Set No. 30 marks the completion of Volume 3. Perhaps now is a good time to review just what we have accomplished, and what our hopes are for the future.

In the short space of the one and a half years we have been in business, our material progress has been most gratifying. Starting with thirty employees, we now are approaching sixty. Our original one laboratory in Indianapolis has become two; the Washington Street lab housing our electrical and photographic activities, and the Tenth Street lab housing the Clinic, mechanical analysis, and record changer department. For printing, collating and shipping of PHOTOFACT Folders we now have three plants operating in Chicago. All this has become possible because of the universal and enthusiastic reception of our products.

This past year has brought another activity to our organization and that is the preparation of custom manuals on radio receivers, record changers and other electronic apparatus. We are sorry that we cannot reveal at this time the names of the firms for whom we are doing the specialized work. Suffice it to say that the list reads like the "blue book" of the industry. What does this mean to you? Just this,—this invaluable experience is being translated into tangible improvements that are making PHOTOFACT Folders better than ever.

One outstanding achievement has been the redrafting of schematics to "PHOTOFACT STANDARD NOTATION," starting in Set 23. This feature, which has been termed the most outstanding improvement in service literature in twenty years, saves hours of time by abolishing the so-called design differences between makes which turn out to be only differences in drafting. Hundreds of enthusiastic letters from our subscribers attest to the merit of this feature.

Incidentally the standards of "PHOTOFACT STANDARD NOTATION" were not pulled out of thin air. Where a division of opinion occurred—we accepted the opinions of the majority. The biggest point in question was the method to be used in representing tube basing. We asked you and your answers to our ballots on the question in our poll in Set No. 18 were decisive. PHOTOFACT Folders give you the kind of a schematic that you have always wanted.

Another feature you asked for was an optional alignment method for F.M. receivers. While admittedly visual alignment using a sweep signal generator and oscilloscope gives the finest results, there are many good service shops who are not equipped with this apparatus. Suitable sweep signal generators are still in short supply and the volume of work in many shops may not be sufficient to justify their purchase. Accordingly, as announced in PHOTOFACT SERVICER No. 28, we are now giving both visual and the V.T.V.M.—AM signal generator alignment methods on all FM sets. On visual alignment we show you by diagrams of actual wave forms how to secure best performance from the set. Only the PHOTOFACT system can give you these features, because PHOTOFACT data is taken from the actual set.

As mentioned in the following article, the Howard W. Sams Radio Service Clinic (see PHOTOFACT SERVICER No. 13) is functioning with the purpose of bringing actual shop practice under scientific analysis, to bring you better ways of running your business, and making repairs; and to help you select test equipment. We have made some false starts and our task is a lengthy one; but we are continuing our work to help you.

Two new and original books have been issued, and are currently available from your distributor. The Howard W. Sams Dial Cord Stringing Guide shows you how to restring the dials of the many thousands of receivers issued from 1938 through 1946. At only 75¢ net, this guide may more than pay for itself in time-saving on a single job; especially if the cord has jumped the pulleys or has been tampered with by the customer.

The second book is the Howard W. Sams Automatic Record Changer Service Manual that gives detailed service data on 41 chassis of post-war record changers—all entirely different. Included is data on leading wire, tape and paper disc recorders. If you are a professional service engineer, you owe it to yourself to examine this book at your distributor's—and to examine is to buy.

We wish it were possible for you—every one of you—to visit our establishment, and see how we conduct our activities. Those that have had the pleasure of such a visit, and that includes representatives of manufacturers, distributors, and the press, as well as dealers and service technicians, have come away brimming with enthusiasm and praise. All have remarked about the marvelous "esprit de corps"—the whole-hearted and enthusiastic devotion of our staff members to our organization. We're all "radio bugs"—we're doing something that has never been done before—and we're having a whale of a good time doing it.

In all our program you will notice a common, unchanging purpose—to supply practical, usable data that will improve your income, make your work easier and more pleasant. All our plans for the future (and there are many) are on this same basis—we are sorry that at this time we cannot tell you more. You have our sincere assurance however that in Howard Sams publications you will always find practical aid.

★ ★

"INDUSTRY GIVEN 3 MONTHS TO END SERVICING ILLS"

The trade publications "Retail Home Furnishings" of October 23rd, under the startling caption quoted brings news of a "clean-up or else" order to the servicemen of New York City, with the threat of a licensing law to protect the public from repairmen who are "charging exorbitant fees and making incompetent repairs." We are gravely concerned and we regard the current situation as most unhealthy.

It is self-evident to us that "charging exorbitant fees" is anything but an established custom of the radio repair profession—we know of many who make a comfortable living by dint of hard work, but none who could be classed as rolling in wealth. We do not believe that the average serviceman intentionally wishes to over-charge. All he really wants to do is to charge enough for his services to pay for his rent, depreciation and amortization of his increasingly complicated test equipment, the upkeep of his truck, other overhead, and have enough left over to pay a fair salary for his labor. Surely no one can object to that.

Unfortunately the average repair shop operator usually does not know his true cost of doing business. He does know from past experience that his net income from his labor has been small—pitifully small. On the other hand, the general public has no idea at all of the cost of conducting a radio repair business and smugly assumes that the dollar paid becomes a dollar profit.

We have tried to do our part in working out this problem by the issuance of the Accounting Folders, which have been furnished without charge to Institute Members. We hope later, as the result of our clinic activities, to arrive at a schedule of prices for repairs. While this work is in its infancy, the existence of a fixed schedule of charges should serve not only as a guide for the service technician, but as evidence to the customer as to the validity of charges. Other aids are being worked on, but it is too early as yet to make specific announcements.

With regard to the complaint of "incompetent repairs," we believe that a large percentage of poor repairs in the past has resulted because the service technician has been working "blind," without adequate service data. The advent of PHOTOFACT Folders is rapidly remedying the situation by providing complete, uniform and accurate service data on all makes of instruments. It is axiomatic that no one will do a poor repair job when shown how to do a good one.

We do not think that licensing will change the situation on repair quality, or in screening out the unskilled. License examinations always favor the man who can "talk" a good repair job—not the man who can *do* one. The marvel of the radio industry is the number of comparative youngsters who have risen to top-ranking positions in its many important branches—and many of these have graduated from the ranks of the service profession. Let us avoid artificial restrictions

that may keep our profession from being an avenue of progress for many by running our business in an honest, professional manner.

Because of the youth of our industry we feel that the subject of licensing radio servicing operations must be considered in the light of other and older industries. For example, the automobile industry has prospered through educating tens of thousands of independent servicemen whose innate business ability has made possible the industry's tremendous growth; and as far as we know without the artificial aid of any legislative restriction.

Please write and tell us frankly just how you feel about the subject of licensing. We will pass your letters on to those to whom the problem has been presented for a solution. Your opinion will be valuable.

★ ★

CHANGE OF EAR COPY

In response to the requests of several of our patrons, we are changing our ear copy procedure on combination battery and line or "three-way" portable receivers. In the future such sets will be labeled "Battery-Line." The designation of "Battery Operated" will be reserved for sets in which batteries provide the only power source, such as farm receivers and personal sets.

Suggestions for the improvement of our services are always welcome—please tell us of any way we can make the Folders more valuable for you.

★ ★

PRINTER'S ERROR IN SET 27

Through a misunderstanding, our printer ran and enclosed the wrong Folder in Set 27. Our envelope specified 4717-32 to be the Zenith S-11680; instead, he printed the Folder on the S-11468. Subscribers already have this data—it was also covered by Folder 4713-35 of Set 23.

To provide a replacement, the Zenith S-11680 Folder was included as an extra copy in Set 28. This replacement cost you nothing since it was included over and above the regular quantity of Folders per issue. Non-subscribers who have purchased Set 27, and who will not require other issues, can obtain a no-charge replacement for the incorrect Folder by writing our office at 2924 East Washington Street, Indianapolis 6, Indiana. Please give us the name of your distributor.

★ ★

FIELD EXPERIENCES

Here is your opportunity for passing practical service experiences to others for the benefit of all. For every service "Field Experience" published, we issue to the author a certificate that is good for one PHOTOFACT Folder Set. Since it is impossible to verify the accuracy of contributions, we cannot be responsible for either the diagnosis made of the receiver trouble, or the results which will be obtained by following the suggested repair routine. All contributions become the property of Howard W. Sams & Company, Inc.

★ ★

PHILCO PORTABLE 46-350
Photofact 4610-24, Set 10

"Complaint: Whistling, oscillation and motorboating. All filters and by-passes check o.k.

"Cause: Broken ground strap on the gang condenser. This variable condenser is rubber mounted and the ground strap is on the bottom so that a break is sometimes difficult to detect by inspection."

Submitted by: Mr. J. Kendall Benzing, Monona, Iowa

★ ★

DELCO R1251—XXX SERIES
Photofact 4711-10, Set 21

"This receiver was known to operate perfectly while out of the cabinet, but as soon as it was installed in the cabinet it would operate from 10 to 30 minutes, then give out a rumbling noise and cut off. Receiver could be allowed to cool and when power was turned back on the same cycle would occur.

"After checking this receiver thoroughly while operating and finding nothing wrong, I removed front metal panel and put a large cardboard box over the entire receiver in order to duplicate receiver while in cabinet—set played about 15 minutes and cut-off.

"The trouble was located in Broadcast Ant. Loading Coil opening up where the winding was soldered to lug (Item No. 161). I removed one turn from the winding, resoldered to lug allowing plenty of slack for future expansion and the job was done. I have had no further complaint with reference to the above receiver."

Submitted by: Mr. P. E. McGee, Moreland Avenue Radio Shop, 926 Moreland Avenue, S. E., Atlanta, Georgia

FEEDBACK OR OSCILLATION

"On five- and six-tube table model receivers, check B-plus to chassis. If the only by-pass is an electrolytic, shunt this with a 0.5 or 0.2 mfd condenser."

Submitted by: Mr. R. W. Weaver, 1317 Ridge Avenue, Zanesville, Ohio

Editor's note: A 0.1 condenser is usually large enough to do the trick.

★ ★

FIRESTONE AIR CHIEF 4-A-31
Photofact 471-20, Set 11

"Complaint: Excessive noise, especially on weaker stations.

"In checking the alignment, it was found that the Antenna Trimmer, A6, mounted on the loop, could not be adjusted to give a peak reading. Attention was called to this by the appearance of higher frequency broadcast stations as strong images on the low frequency end of the dial.

"Inspection showed that the gang condenser (55) had a trimmer across the antenna section, which did not appear in the schematic, and this trimmer was set at near maximum capacity.

"By opening this extra trimmer to its minimum capacity point, Antenna Trimmer A6 was brought into its normal range, and could be aligned according to the alignment instructions. A drop of cement was used on the extra trimmer screw to hold its adjustment.

"With the antenna circuit tracking properly, normal signal-to-noise ratio was restored, gain was improved, and images minimized."

Submitted by: Mr. L. H. Matteson, 20915 Haviland Avenue, Hayward, California

★ ★

ZENITH 9H079
Photofact 467-34, Set 7

"Complaint: Considerable hum when records were being played; most pronounced when bass or alto tone control switches are closed, or when the volume control is turned on full.

"The manufacturer's service data advises to check audio and AC leads and dress them away from the volume control leads, but we have found real remedy to be the replacement of a defective 7F7 tube used as 'Phono-Osc-Amp' tube No. 9, on the 'Phono-Osc-Amp' assembly. This tube may check good, but try a replacement."

★

KAISER-FRAZER INSTALLATION NOTE

"When doing a radio in a Kaiser-Frazer Car, cut a piece of rubber tube or fish paper to the size of the top of the set and tape it down. This will prevent the shorting of the blower switch which is installed on the right side from the top of the dash board; and contacts of which do not sufficiently clear the top of the radio. This cover will also protect the antenna cable from grounding to the top of the dash, as it is inserted into the set at an angle, through the top of the radio cabinet.

"Failure to take this precaution before the set is installed will only necessitate removal of the set again to give it this protection, and prevent a burnt-out fuse or blower wiring. We would recommend this precaution be taken, even though the car may not have blower switch installed at the time the radio is installed."

Submitted by: Mr. Bernard Blatt, Radio-Television Center, Haverstraw, New York

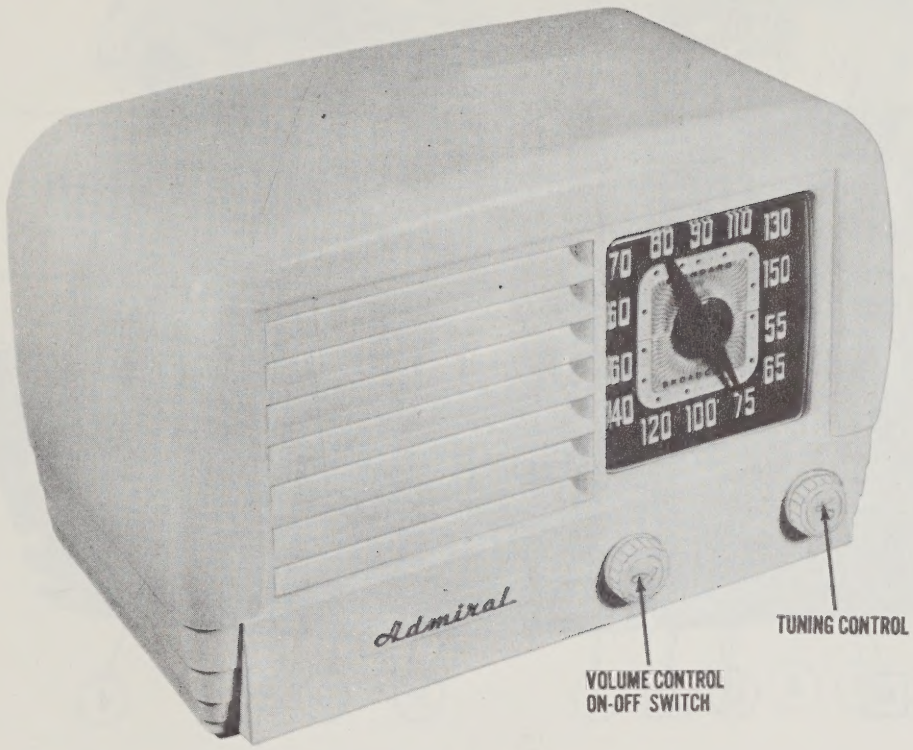
PUBLICATION DATES

When will other sets of PHOTOFACT Folders be published?

Volume 4—Set No. 31 ..... **January 15**
Volume 4—Set No. 32 ..... **January 15**
Volume 4—Set No. 33 ..... **February 15**
Volume 4—Set No. 34 ..... **February 15**

If you have been unable to get any issues of PHOTOFACT *Folder Sets, send your order and money directly to us and we will see that you are supplied.*

ADMIRAL CHASSIS
MODELS 5K1, UL5K1



ADMIRAL CHASSIS
MODELS 5K1, UL5K1

ADMIRAL MODEL 7T10 (Ch. 5K1)

TRADE NAME	Admiral, Models 7T10, 7T14, 7T15 (Ch. 5K1, UL5K1)
MANUFACTURER	Admiral Corp., 3800 W. Cortland St., Chicago, Ill.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 or 14B6 Det.-AVC-AF, 50L6GT or 50A5 Power Output, 35Z5GT or 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1630KC RATING .220 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	250MMFD	High side to rear stator tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	250MMFD	"	1630KC	"	"	A5	" " " "
3		Place leads near loop. No direct connection.	1400KC	Tune for maximum output.	"	A6	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ADMIRAL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3A	Det.-AVC-AF	12SQ7	12SQ7	8Q	
B	Det.-AVC-AF	14B6	14B6	8W	
4A	Power Output	50L6GT	50L6GT	7AC	
B	Power Output	50A5	50A5	6AA	
5A	Rectifier	35Z5GT	35Z5GT	6AD	
B	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	50	150	67A10	2N520	DSB-5030-150	TA-530	PRSA150-50-30	BRD3515	Filter - Red
B	30	150							" - Yellow
7	.05	400	64B1-22	TP426	MPh-4-05	TC-15	484-05	DT4S5	Line Filter
8	.02	400	64B1-24	TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.01	400	64B1-25	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.01	400	64B1-25	TP421	S-4-01	TC-11	484-01	DT4S1	" "
11	.1	200	64B1-30	TP428	S-4-1	TC-1	484-1	DT4P1	AVC Filter
12	.05	400	64B1-22	TP426	S-4-05	TC-15	484-05	DT4S5	Tuning Cap. Isolation†
13	.18	200		TP429	S-4-2		484-2	DT4P2	Line Isolation†
14	500	500	65B6-6	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
15	250	500	65B6-5	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter
16	20	500	65B6-26						Fixed Trimmer
17	50	500	65B6-4	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid

†Used in Underwriters approved models only.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	1 Meg.	½	75B1-16	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 18A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

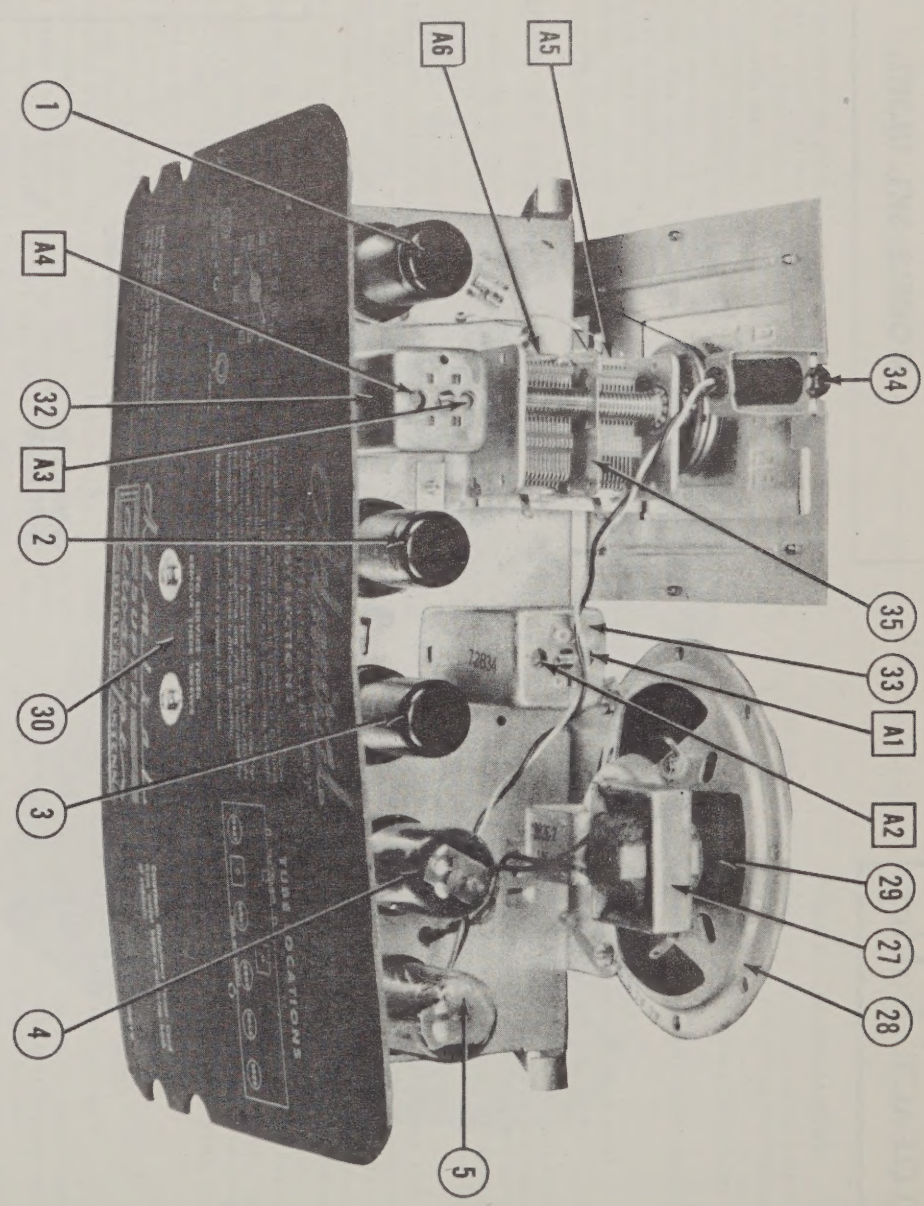
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ADMIRAL PART No.	IRC PART No.	IDENTIFICATION CODES
19	22KΩ	½	60B8-223	BTS-22K	Red-Red-Or. Oscillator Grid
20	1 Meg.	½	60B8-105	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
21	4.7 Meg.	½	60B8-475	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid.
22	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
23	470KΩ	½	60B8-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
24	150Ω	½	60B8-151	BW-½-150	Br.-Grn.-Br. Output Cathode
25	33Ω	1	60B28-3	BW-1-33	Or.-Or.-Blk. Surge Limiter
26	1000Ω	1	60B28-2	BTA-1000	Br.-Blk.-Red Filter
36	150K	½	60B8-154	BTS-150K	Blk.-Grn.-Yl. Line Isolation-See Note

Note-Used on Underwriters Labs. approved models only.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
27	3300Ω	3.7Ω	255Ω	.6Ω	98A4	A-3876*	T22S46*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: ADMIRAL PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105		
28A	PM	3.7Ω	78B26-2	Mod. P5-X		Used in Chassis UL5K1
B			78B26-1			Used in Chassis 5K1
	CONE DIA.	VC DIA.				
29	4-3/4"	1/2"	NOT READILY REPLACEABLE - USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: ADMIRAL PART No.	MEISSNER PART No.
30	Loop Ant.		1.5Ω	69C19	
31	Osc. Coil		5.5Ω	69A20	14-1040
32	Input IF	17Ω	17Ω	72B31	16-6658
33	Output IF	18Ω	17Ω	72B32	16-6660

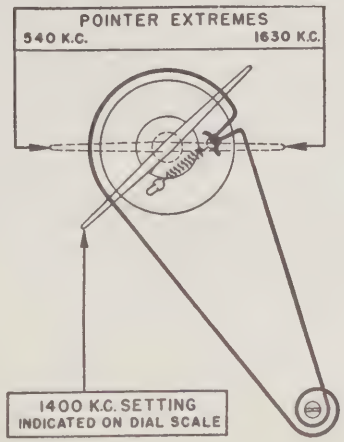
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: ADMIRAL PART No.		INSTALLATION NOTES
34	Bayonet	6-8	0.15	Brown	81A1-8		Type 47

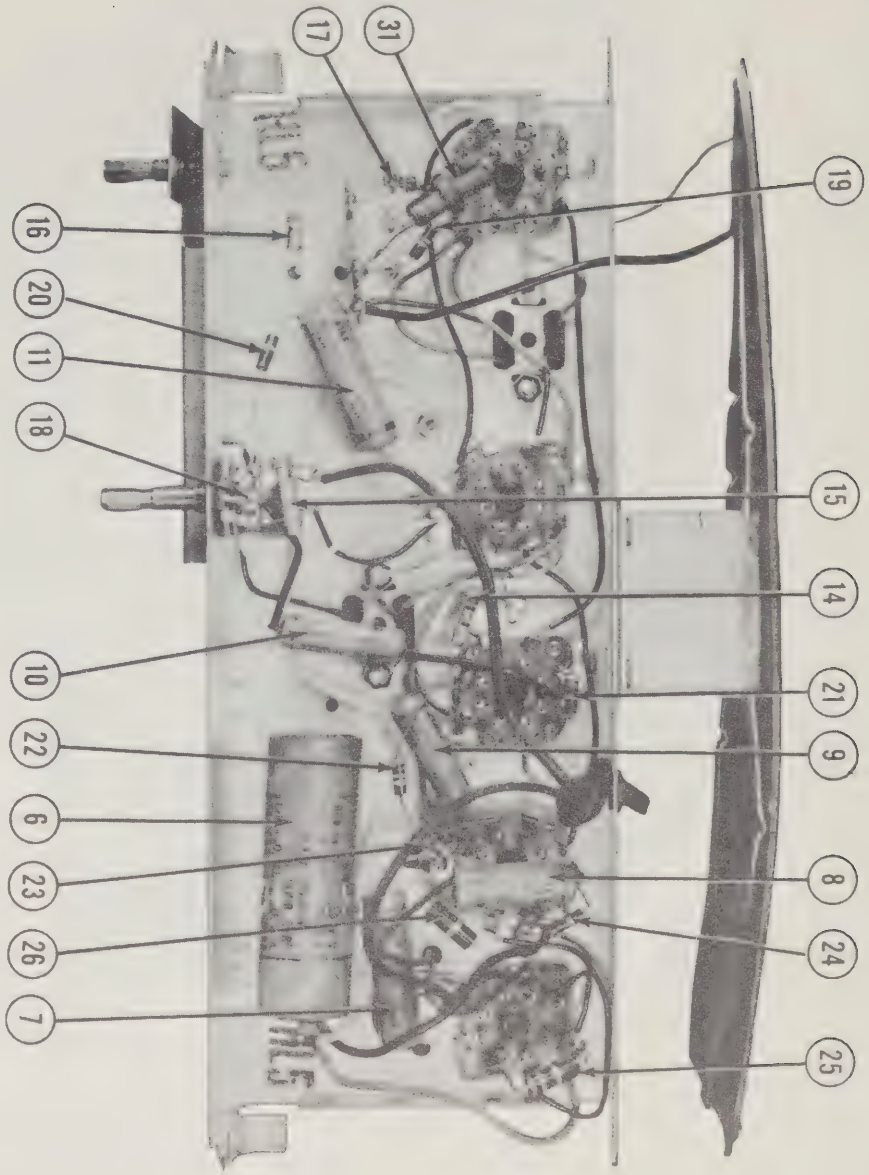
MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
35	2 Gang Var. Cap	A1460	(25-456 MMF, 17-184MMF)
	Dial Scale	21B39	
	Pointer	25A26	

DIAL CORD STRINGING

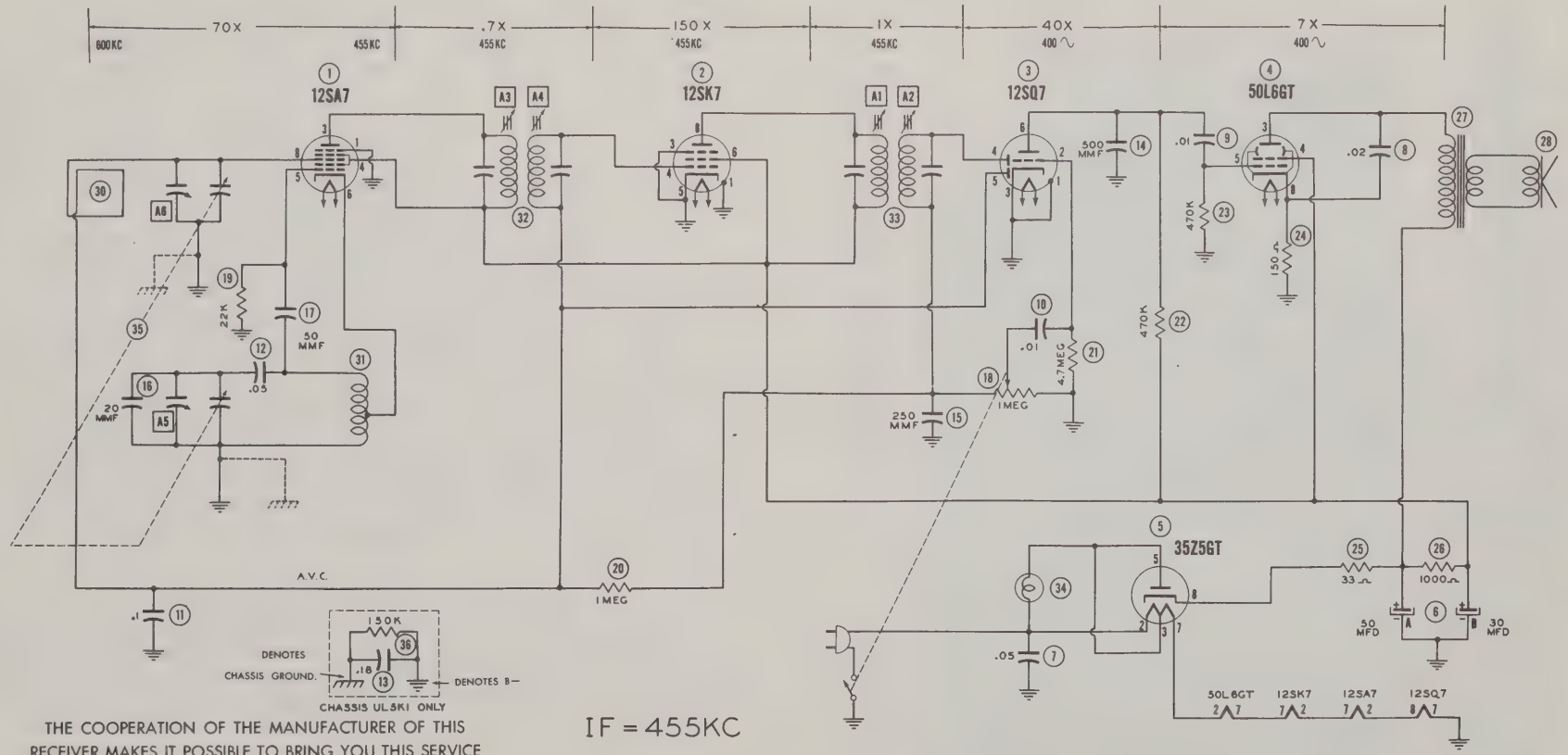


CHASSIS—BOTTOM VIEW



ADMIRAL CHASSIS
MODELS 5K1, UL5K1

ADMIRAL CHASSIS
MODELS 5K1, UL5K1



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455KC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	12VAC	87VDC	87VDC	-12VDC§	0V.	24VAC	-.6VDC
2	12SK7	0V.	24VAC	0V.	-.6VDC	0V.	87VDC	36VAC	87VDC
3	12SQ7	0V.	-.6VDC	0V.	-.6VDC	-.6VDC	43VDC	0V.	12VAC
4	50L6GT	0V.	85VAC	108VDC	87VDC	0V.	0V.	36VAC	5VDC
5	35Z5GT	0V.	117VAC	112VAC	112VDC	112VAC	112VDC	85VAC	115VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0Ω	12Ω	100KΩ	100KΩ	22KΩ	.8Ω	24Ω	2 Meg.
2	12SK7	0Ω	24Ω	0Ω	2 Meg.	0Ω	100KΩ	30Ω	100KΩ
3	12SQ7	0Ω	5 Meg.	0Ω	2 Meg.	900KΩ	570KΩ	0Ω	12Ω
4	50L6GT	0Ω	85Ω	100KΩ	100KΩ	500KΩ	INF.	36Ω	150Ω
5	35Z5GT	INF.	112Ω	110Ω	100KΩ	110Ω	100KΩ	85Ω	100KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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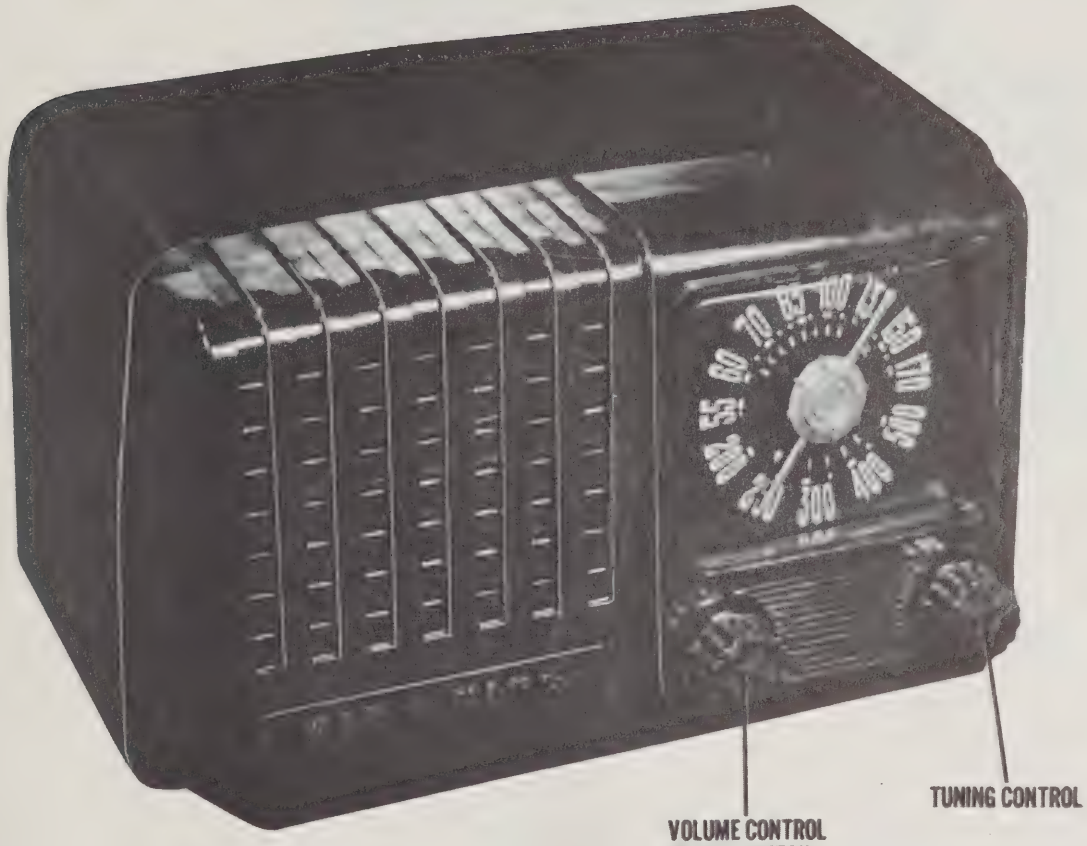
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-1

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

AIR KING MODELS
A-511, A-512



AIR KING MODELS
A-511, A-512

AIR KING MODEL A-511

TRADE NAME	Air King, Models A-511, A-512
MANUFACTURER	Air King Products Co., 170-53rd St., Brooklyn, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35W4 or 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1750KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to rear stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. terminal. Low side to chassis.	1600KC	1600KC	"	A4	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A5	" " " "

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DATE 12/47 FOLDER #30 FOLDER #4720-2

PARTS LIST AND DESCRIPTIONS

AIR KING MODELS
A-511, A-512

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		AIR KING PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5A	Rectifier	35W4	35W4	5BQ	
B	"	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	AIR KING PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150		2N511	DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	Filter - Red
B	40	150							" - Green
7	.05	400		TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
9	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	"
11	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.002	400		TP405	S-6-002	TC-22	484-002	DT6D2	Ext. Ant. Isolation
13	610	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
14	330	500		MC241	MO.5-33	1FM-33S	1468-0004	5W5T3	Diode Filter
15	220	500		MC240	MO.5-325	1FM-325	1468-00022	5W5T25	IF Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	AIR KING PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	500KΩ	½	AK-2471	MR-48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 16A per instructions
C	Switch		" "	M-26	41	SW-A	" " " " "

RESISTORS

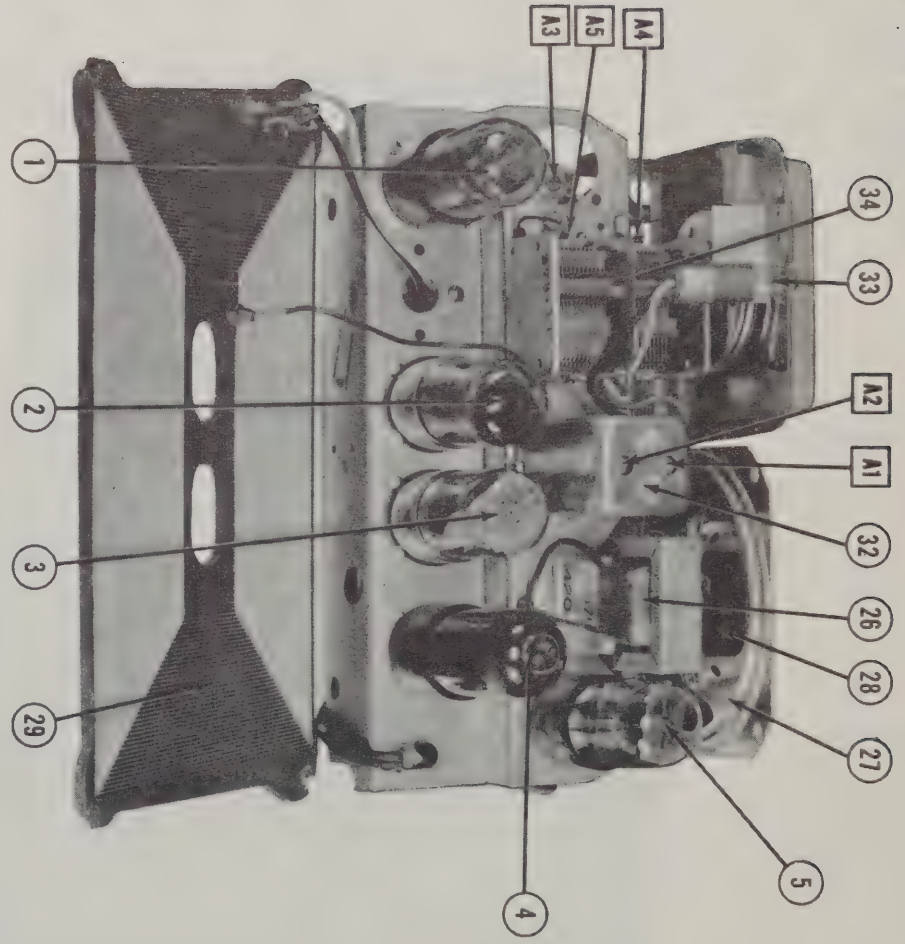
ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	AIR KING PART No.	IRC PART No.	
17	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
18	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. IF Grid - See Note 1
19	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network - See Note 2
20	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
21	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load - See Note 3
22	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Output Grid - See Note 4
23	1500Ω	2		BT-2-1500	Br.-Grn.-Red Filter - See Note 5
24	18Ω	½		BW-½-18	Br.-Gray-Blk. Rectifier Ballast
25	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode-See Note 6

Note 1 - Some models use 1 Meg. in this application. Replacement same as #22.
Note 2 - Some models use 3.3 Meg. in this application. IRC replacement BTS-3.3 Meg.
Note 3 - Some models use 220KΩ in this application. IRC replacement BTS-220K.
Note 4 - Some models use 330KΩ in this application. IRC replacement BTS-330K.
Note 5 - Some models use 2200Ω in this application. IRC replacement BT-2-2200.
Note 6 - Not used in all models.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIR KING PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
26	2900Ω	3.3Ω	190Ω	.6Ω	Part of 5879	A-3876*	T22S45*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: AIR KING PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113†		†Drill and tap magnet frame.
27	PM	3.3Ω	5879	Mod. P4-X		
	CONE DIA.	VC DIA.				
28	4"	1/2"	NRR-USCU			

R F COILS

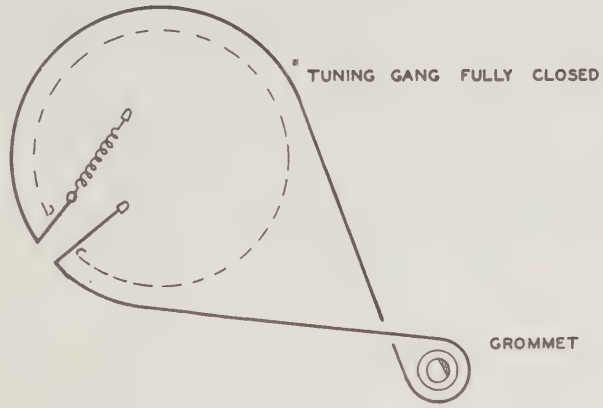
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: AIR KING PART No.	MEISSNER PART No.
29	Loop Ant.	0Ω	1.8Ω		
30	Osc. Coil	5.8Ω			14-1040
31	IF Coil		15.1Ω		
32	Input IF	28Ω	28Ω		16-6658

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: AIR KING PART No.		INSTALLATION NOTES
33	Bayonet	6-8	0.15	Brown			Type 47

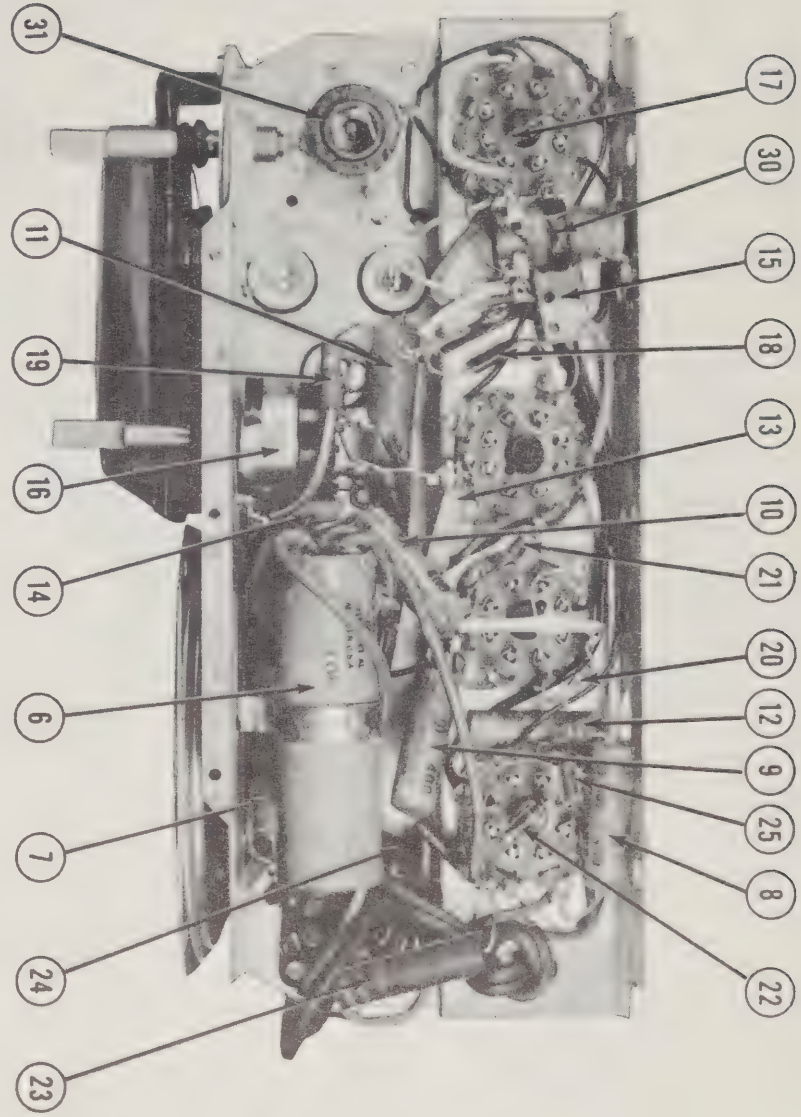
MISCELLANEOUS

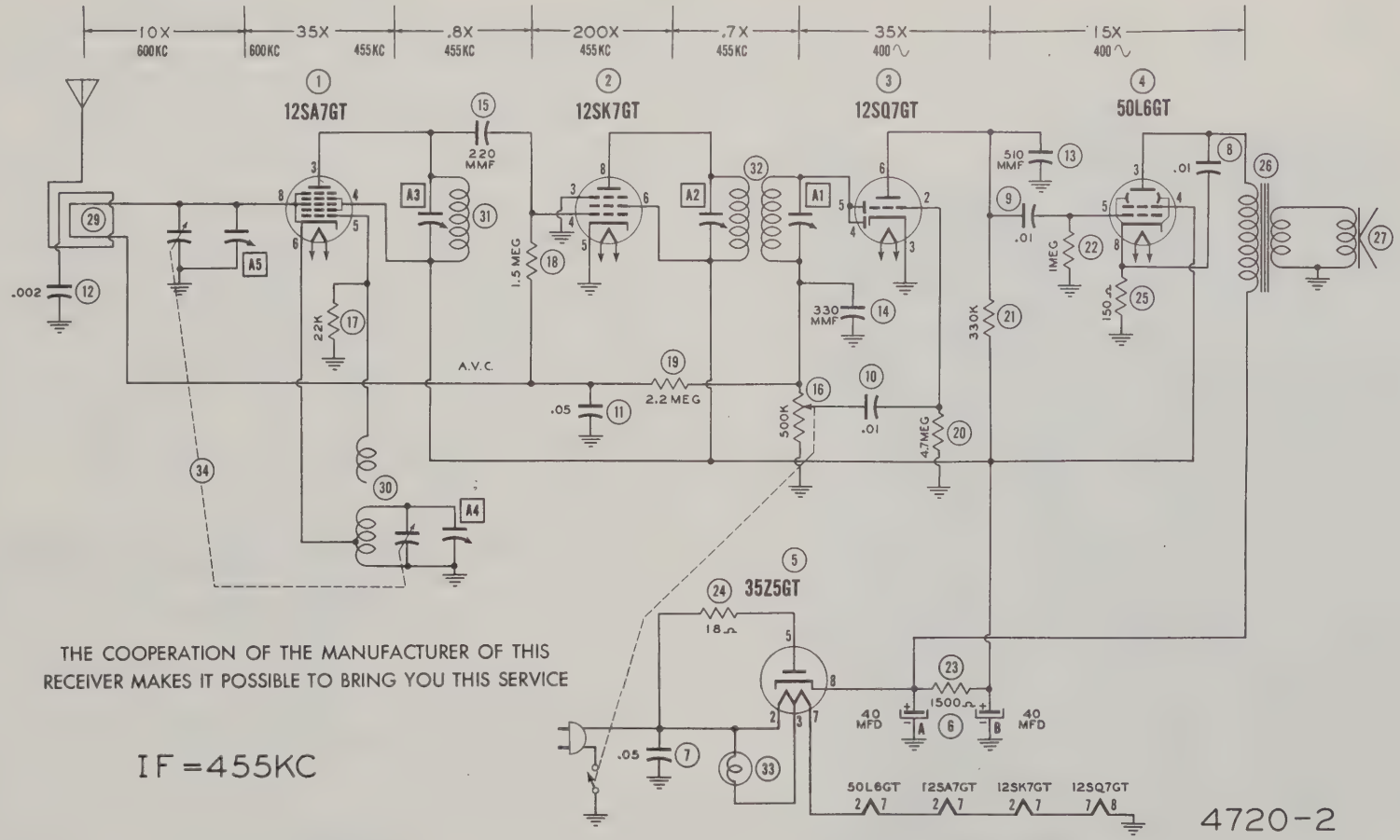
ITEM No.	PART NAME	AIR KING PART No.	NOTES
34	2 Gang Var. Cap		(24-443 MMF, 20-274 MMF)



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF=455KC

4720-2

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	36VAC	88VDC	88VDC	-8.8VDC§	0V.	23VAC	-.7VDC
2	12SK7GT	0V.	23VAC	0V.	-1.6VDC	0V.	88VDC	11VAC	88VDC
3	12SQ7GT	0V.	-1.4VDC	0V.	-.3VDC	-.3VDC	65VDC	11VAC	0V.
4	50L6GT	0V.	87VAC	115VDC	88VDC	0V.	0V.	36VAC	6.3VDC
5	35Z5GT	0V.	117VAC	112VAC	0V.	110VAC	0V.	87VAC	115VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0Ω	38Ω	1 Meg.	1 Meg.	23KΩ	.5Ω	26Ω	3 Meg.
2	12SK7GT	0Ω	26Ω	0Ω	4.5 Meg.	0Ω	1 Meg.	13Ω	1 Meg.
3	12SQ7GT	0Ω	5 Meg.	0Ω	500KΩ	500KΩ	1.3 Meg.	13Ω	0Ω
4	50L6GT	0Ω	90Ω	1 Meg.	1 Meg.	1 Meg.	INF.	38Ω	150Ω
5	35Z5GT	INF.	115Ω	110Ω	INF.	130Ω	INF.	90Ω	1 Meg.

§TAKEN WITH VACUUM TUBE VOLTMETER.

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

BELL SOUND MODEL
RC-47 (RE-CORD-O-FONE)

BELL SOUND MODEL RC-47 (RE-CORD-O-FONE)

TRADE NAME	Bell Sound, Model RC-47 (RE-CORD-O-FONE)
MANUFACTURER	Bell Sound Systems, Inc., 1183 Essex Ave., Columbus 3, Ohio
TYPE SET	AC Operated Portable Recorder and Phonograph
TUBES (THREE)	Types, 7F7 AF Amp., 7C5 Power Output, 7Y4 Rectifier
POWER SUPPLY	110-120 Volts AC RATING .40 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	3.1VAC	1.3VDC	27VDC	0V.	-.4VDC	60VDC	0V.	3.1VAC
2	7C5	3.1VAC	240VDC	260VDC	27VDC	0V.	0V.	12VDC	3.1VAC
3	7Y4	3.1VAC	0V.	310VAC	0V.	0V.	310VAC	350VDC	3.1VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7F7	.1Ω	2.7KΩ	450KΩ	500KΩ	10 Meg.	650KΩ	0Ω	.1Ω
2	7C5	.1Ω	80KΩ	80KΩ	450KΩ	INF.	500KΩ	270Ω	.1Ω
3	7Y4	.1Ω	INF.	440Ω	INF.	INF.	420Ω	80KΩ	.1Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 12/47 SET #30 FOLDER #4720-3

PARTS LIST AND DESCRIPTIONS

BELL SOUND MODEL RC-47
(RE-CORD-O-FONE)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		BELL SOUND PART No.	STANDARD REPLACEMENT		
1	AF Amp.	7F7	7F7	8AC	
2	Power Output	7C5	7C5	6AA	
3	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	BELL SOUND PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
4A	30	450		FP145	DY-30-450	EL-3	AF6J	UP3045	Filter
B	50	25		TC29	M-50-25	TA-50	PRS25-50	BR502	Cathode Bypass
5A	30	450		FP145	DY-30-450	EL-3	AF6J	UP3045	Filter
B	50	25		TC29	M-50-25	TA-50	PRS25-50	BR502	Cathode Bypass
6	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Tone Comp.
7	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	" "
8	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
9	.5	600		TP432	SDH-6-5	TC-5	684-.5	DT6P1	Decoupling
10	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Tone Comp.
11	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
12	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	" "
13	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
14	.003	600		TP406	S-6-003	TC-23	684-003	DT6D3	" "
15	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Voice Coil Coupling

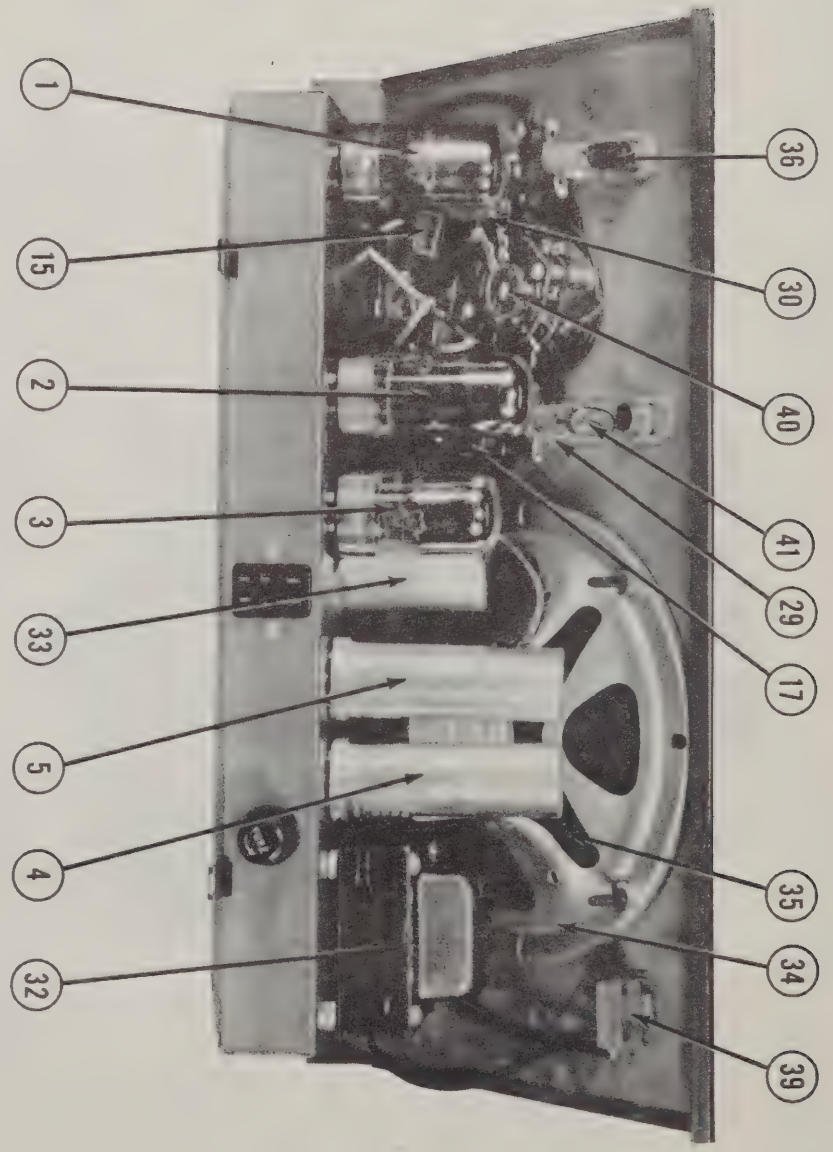
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	BELL SOUND PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
16A	500KΩ	½		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 16A per instructions
17A	1 Meg.	½		MR53	D13-137	M-63-Z	Tone Control
B	Shaft			Not Req.	A	Not Req.	Attach to 17A per instructions
C	Switch			M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	BELL SOUND PART No.	IRC PART No.	
18	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Series Phono
19	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue Mic. Amp. Grid
20	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Mic. Amp. Plate Load
21	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mic. Amp. Decoupling
22	2700Ω	½		BTS-2700	Red-Vi.-Red AF Cathode
23	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. AF Plate Load
24	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. Output Grid
25	270Ω	1		BW-1-270	Red-Vi.-Br. Output Cathode
26	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Feedback
27	2000Ω	10		AB-2K	Filter
28	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Series Neon Indicator
29	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Neon Indicator Shunt
30	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
31	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Tone Compensation

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	BELL SOUND PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
32A	117V AC	620V CT @ .05A	5.1V CT @ .15A	6.1V CT @ 1.3A	B-20110	P-6119	T22R02	P-2951
B	@ .4A				B-20071$			

$Alternate Transformer

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		BELL SOUND PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.1	PRI.	SEC.1					
33	3700Ω	3.5Ω	270Ω	.4Ω	B-20099				
		SEC.2 40KΩ		SEC.2 2800Ω					

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			BELL SOUND PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-109		
34	PM	3.5Ω		Mod. P6-W		
	CONE DIA.	VC DIA.				
35	6-1/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					BELL SOUND PART No.		
36	Bayonet	6-8	0.15	Brown	S44		Type 47

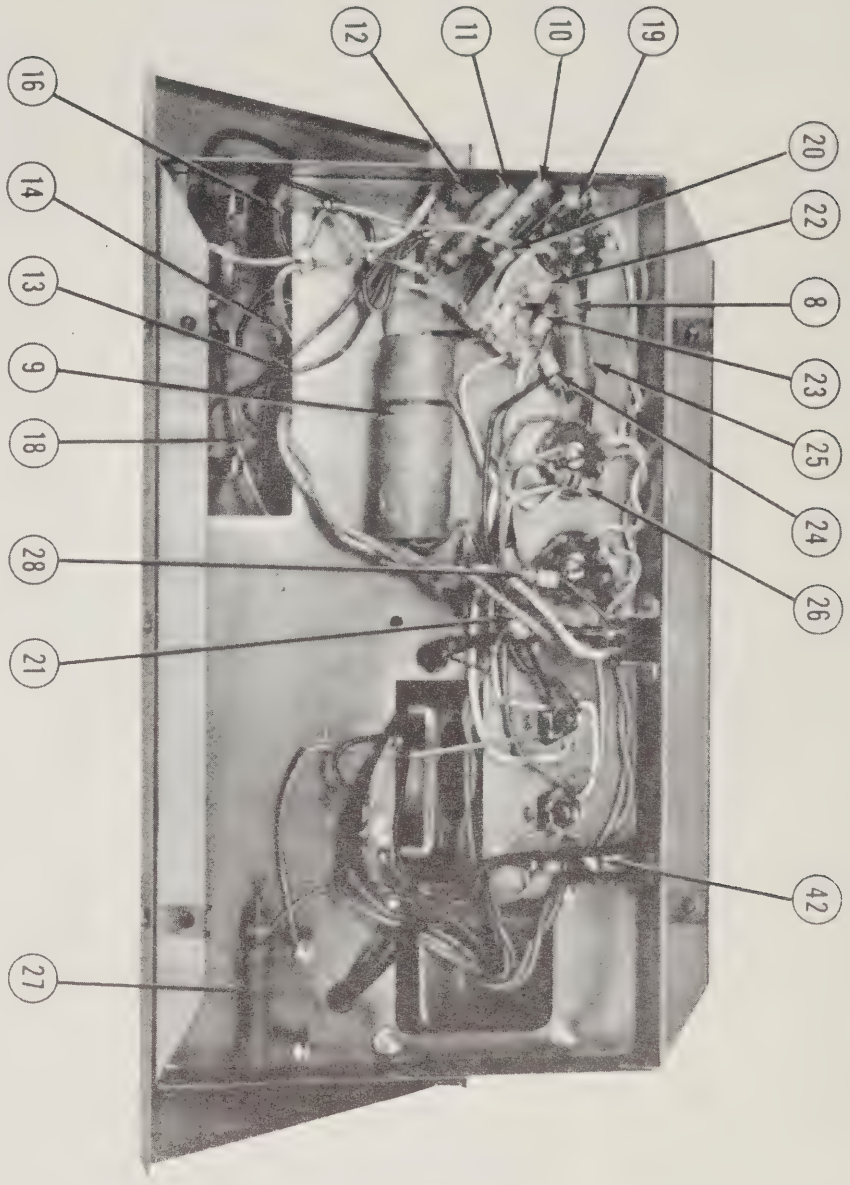
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	BELL SOUND PART No.	ASTATIC PART No.	
37		L-40	Playback
38		X-26	Crystal Cutter

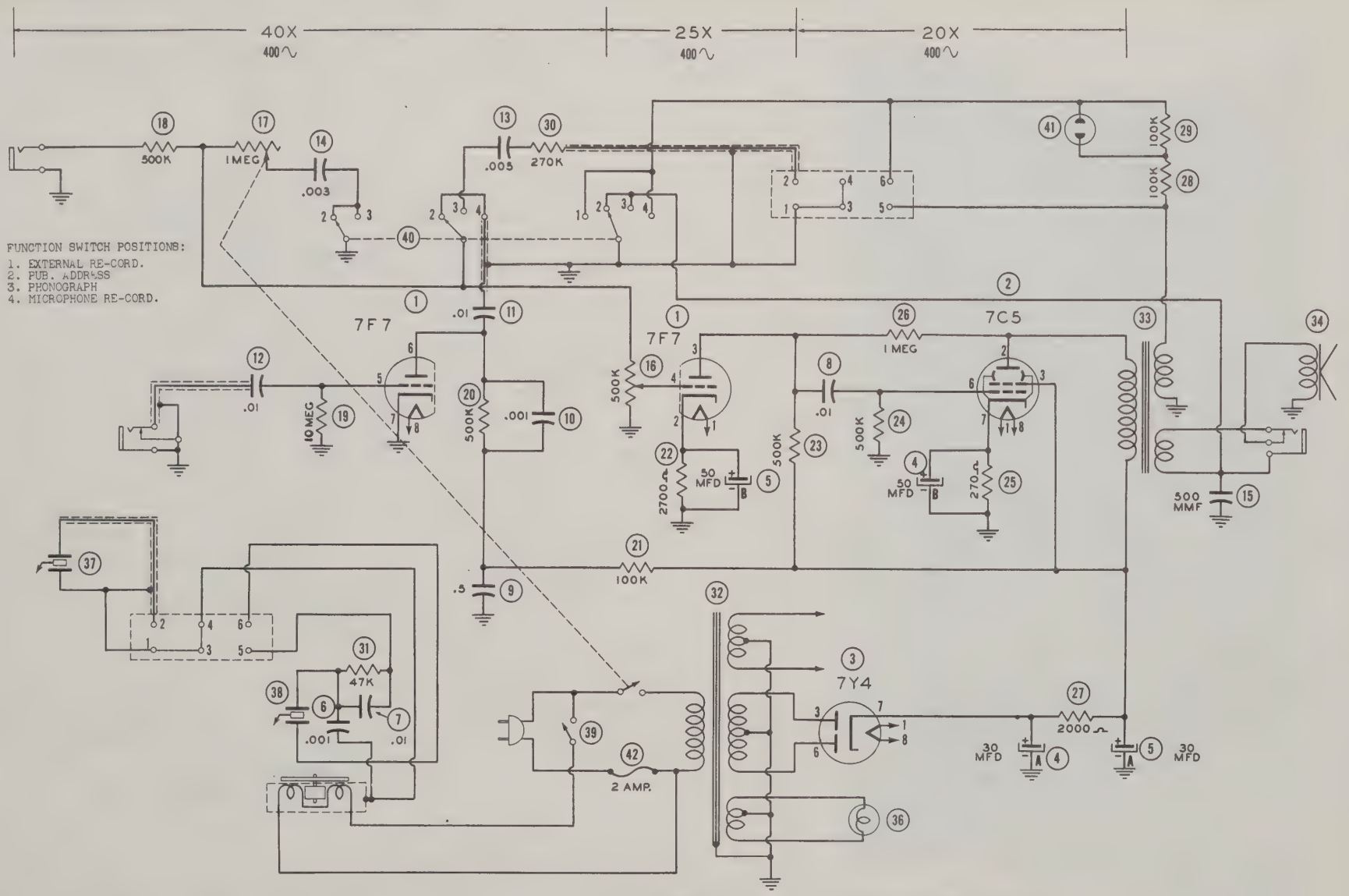
MISCELLANEOUS

ITEM No.	PART NAME	BELL SOUND PART No.	NOTES
39	On-Off Switch		Turntable
40	Switch		Selector
41	Indicator	NE-51	Neon
42	Fuse		4AG (2 Amp.)

CHASSIS—BOTTOM VIEW



BELL SOUND MODEL RC-47 (RE-CORD-O-FONE)



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4720-3

TRADE NAME	Capitol, Model D-17
SUPPLIER	Capitol Distributing Corp., Sunset & Vine, Hollywood, Calif.
TYPE SET	AC Operated Record Player with 7 Tube Amp. and Speaker
TUBES (SEVEN)	Types, 6SK7 AF Amp., 6SK7 Expander Amp., 6H6 Expander Rect., 6SN7GT Phase Inv.-AF, (2) 6V6GT Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .82 Amp. @ 117 Volts AC

CAPITOL MODEL
D-17

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0V.	0V.	5.5VDC	0V.	5.5VDC	40VDC	6.1VAC	112VDC
2	6SK7	0V.	6.1VAC	0V.	-.8VDC	0V.	8VDC	0V.	155VDC
3	6H6	0V.	0V.	0V.	1.8VDC	0V.	0V.	6.1VAC	.2VDC
4	6SN7GT	0V.	150VDC	7.5VDC	0V.	132VDC	7.5VDC	6.1VAC	0V.
5	6V6	0V.	6.1VAC	290VDC	280VDC	0V.	0V.	0V.	16VDC
6	6V6GT	0V.	6.1VAC	290VDC	280VDC	0V.	0V.	0V.	16VDC
7	5U4G	0V.	290VDC	0V.	270VAC	0V.	270VAC	0V.	290VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7	0Ω	0Ω	1.5KΩ	10 Meg.	1.5KΩ	1.1 Meg.	.1Ω	215KΩ
2	6SK7	0Ω	.1Ω	0Ω	15 Meg.	0Ω	22KΩ	0Ω	220KΩ
3	6H6	0Ω	0Ω	4.5 Meg	600Ω	470KΩ	4.5 Meg.	.1Ω	4.5 Meg.
4	6SN7GT	200KΩ	40KΩ	4KΩ	0Ω	115KΩ	4KΩ	.1Ω	0Ω
5	6V6	INF.	.1Ω	13KΩ	13KΩ	100KΩ	INF.	0Ω	180Ω
6	6V6GT	INF.	.1Ω	13KΩ	13KΩ	100KΩ	INF.	0Ω	180Ω
7	5U4G	INF.	13KΩ	INF.	60Ω	INF.	65Ω	INF.	13KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 12/47 SET #30 FOLDER #4720-4

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CAPITOL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	6SK7	6SK7	8N	
2	Expander Amp.	6SK7	6SK7	8N	
3	Expander Rect.	6H6	6H6	7Q	
4	Phase Inv. & AF	6SN7GT	6SN7GT	8BD	
5	Power Output	6V6GT	6V6GT	7AC	
6	" "	6V6GT	6V6GT	7AC	
7	Rectifier	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CAPITOL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8	20	450		TC75	M-20-450	UT-20	PRS-450-20	BR2045	Filter
9	20	450		TC75	M-20-450	UT-20	PRS-450-20	BR2045	"
10	10	450		TC72	M-10-450	UT-12	PRS-450-10	BR1045	"
11	25	25		TC26	M-25-25	TA-25	PRS-25-25	BR252A	AF Cathode Bypass
12	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling-See Note
13	.003	600		TP406	S-6-003	TC-23	684-003	DT6D3	Tone Compensation
14	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	" "
15	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	" "
16	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
17	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AF Grid Filter
18	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	AF Screen Bypass
19	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	Audio Coupling
20	.2	400		TP429	S-4-2	TC-2	484-.2	DT4P2	AF Decoupling
21	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
22	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	" "
23	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Expansion Amp. Grid Filter
24	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	Expansion Amp. Screen Byp.
25	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	Expansion Coupling
26	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Compression Coupling
27	.2	200		TP429	S-4-2	TC-2	484-.2	DT4P2	Expansion Filter
28	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	Audio Coupling
29	.05	600		TP415	S-6-05	TC-15	684-05	DT6S5	" "
30	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
31	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" " "
32	47	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Tone Compensation-See Note
33	4000	500		MC463	MW.5-24	1FM-24	1467-004	1D5D4	" "
34	47	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" " See Note

Note-Not used in all models.

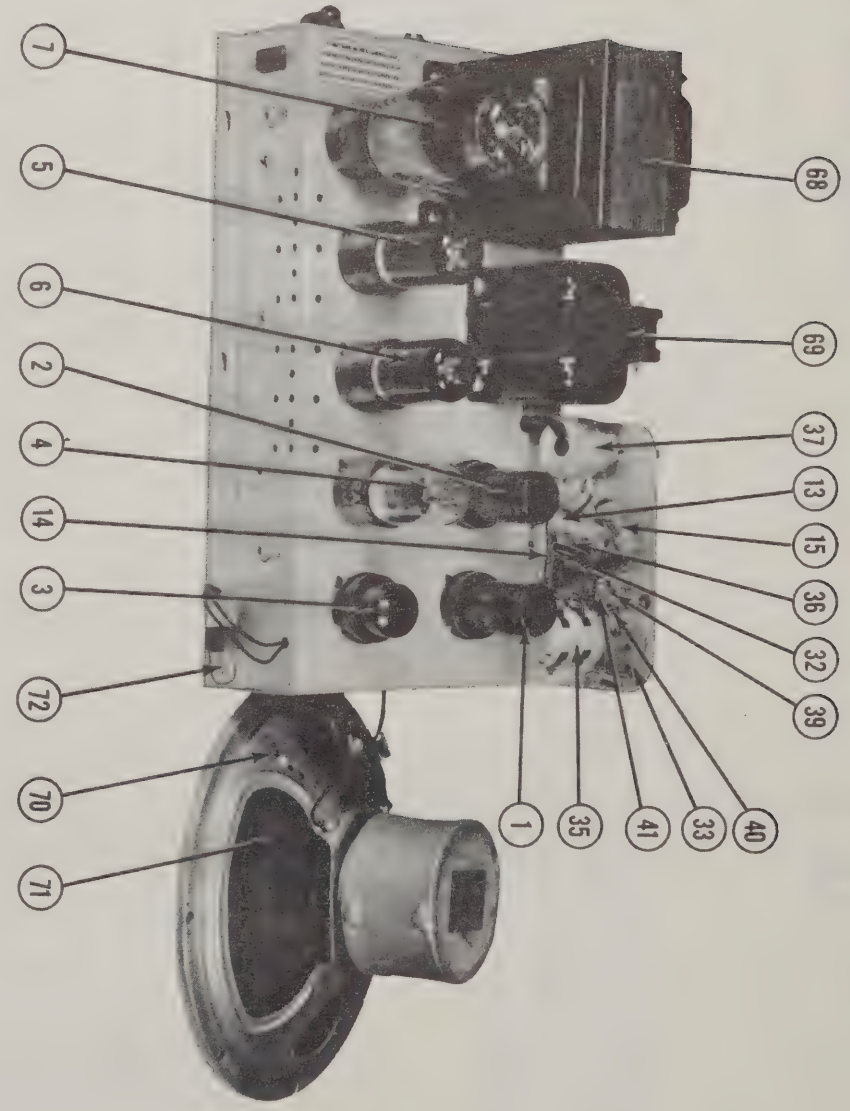
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPITOL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
35A	1 Meg.	½					Volume Control - Front Section
B	2 Meg.	½					" " - Middle Section
C	1 Meg.	½					" " - Rear Section
36A	3 Meg.	½		MR57	D13-140	M-67-Z	Bass Control
B	Shaft			Not Req.	A	Not Req.	Attach to 36A per instructions
37	3 Meg.	½					Treble Control & Switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CAPITOL PART No.	IRC PART No.	IDENTIFICATION CODES
38	470KΩ	½		BTS-470K	Yl.-Vl.-Yl. Phono Shunt
39	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Tone Compensation
40	15KΩ	½		BTS-15K	Br.-Grn.-Or. " "
41	56KΩ	½		BTS-56K	Grn.-Blue-Or. " "
42	4.7 Meg	½		BTS-4.7 Meg.	Yl.-Vl.-Grn. AF Grid

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	CAPITOL PART No.	IRC PART No.	
43	1500Ω	½		BTS-1500	Br.-Grn.-Red AF Cathode
44	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AF Screen Dropping
45	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Plate Load-See Note
46	100KΩ	½		BTS-100K	Br.-Blk.-Yl. AF Decoupling
47	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. Exp. Amp. Grid
48	22KΩ	½		BTS-22K	Red-Red-Or. Exp. Amp. Screen Bleeder
49	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Exp. Amp. Screen Dropping
50	220KΩ	½		BTS-220K	Red-Red-Yl. Exp. Amp. Plate Load
51	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Exp. Diode Load
52	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Exp. Filter
53	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. Exp. Diode Load
54	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. Compressor Diode Load
55	56KΩ	1		BTA-56K	Grn.-Blue-Or. Compressor Diode Bias
56	560Ω	½		BTS-560	Grn.-Blue-Br. Compressor Diode Bias
57	4.7 Meg.	½		BTS 4.7 Meg.	Yl.-Vi.-Grn. Compressor Diode Filter
58	220KΩ	½		BTS-220K	Red-Red-Yl. 2nd AF Grid
59	3900Ω	½		BTS-3900	Or.-White-Red 2nd AF Cathode
60	27KΩ	½		BTS-27K	Red-Vi.-Or. 2nd AF Plate Load
61	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
62	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Output Grid
63	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " "
64	180Ω	2		BW-2-180	Br.-Gray-Br. Output Cathode
65	10KΩ	2		BT-2-10K	Br.-Blk.-Or. Filter
66	20KΩ	20		DG-20K	Bleeder
75	56KΩ	1		BTA-56K	Grn.-Blue-Or. "

Note-Some models use 220KΩ in this application. IRC replacement BTS-220KΩ.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	CAPITOL PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
67	.018	550Ω	17 Henries		C-1003	T20C53	C-2987	

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	CAPITOL PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
68	117V AC @ .82A	540V CT @ .110A	4.9V AC @ 3.0A	6.1V AC @ 2.6A		P-4080*	T22R32*	P-3153*†

†Drill new mounting holes.
*Add series resistor to reduce plate voltage.

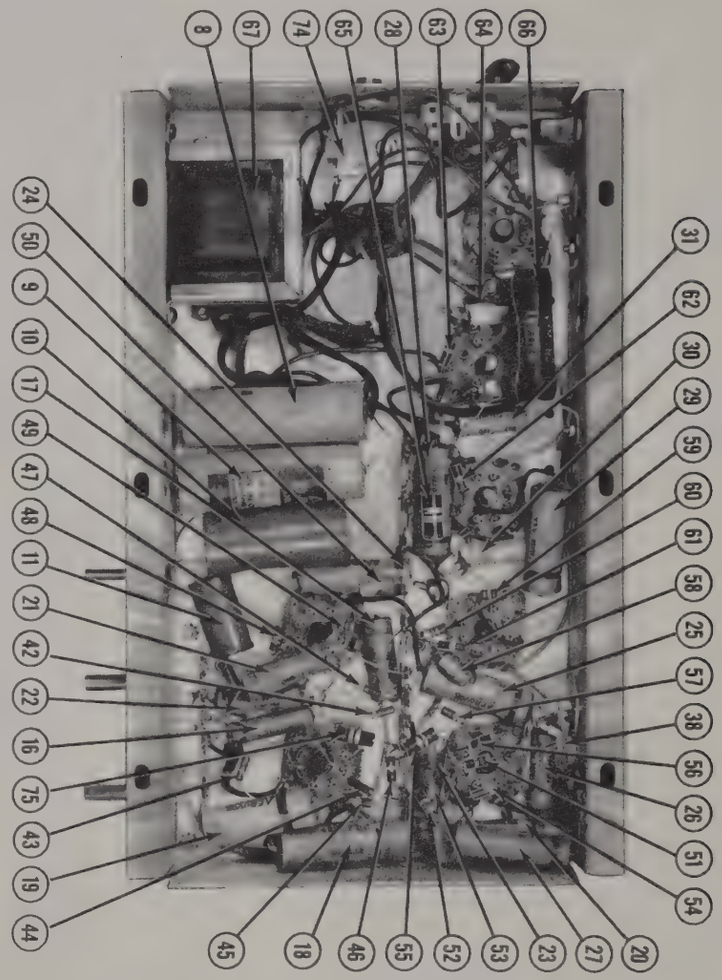
TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CAPITOL PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
69	13000Ω CT	6.2Ω	220Ω CT	.3Ω		A-3303†	T22S48†	A-2904†	†Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CAPITOL PART No.	JENSEN PART No.		
70	FIELD PM	VC IMP. 6.2Ω		ST-104 Mod. P8-8		
71	CONE DIA. 7"	VC DIA. 1"	NOT READILY	REPLACEABLE-USE COMPLETE SPEAKER		

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					CAPITOL PART No.		
72	Bayonet	6-8	0.25	Blue			Type 44

PHONO CARTRIDGE

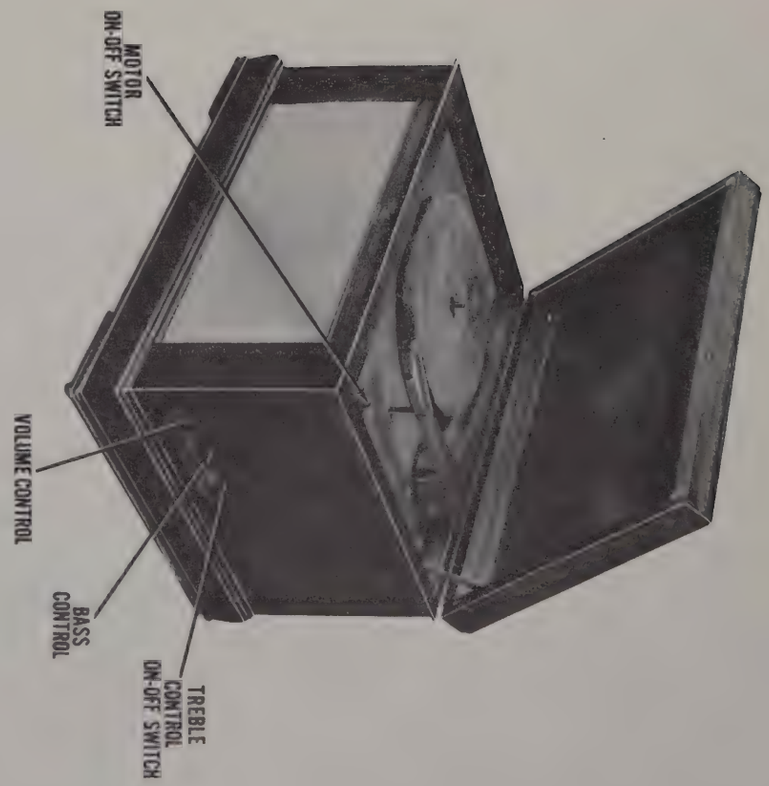
ITEM No.	REPLACEMENT DATA		REMARKS
	CAPITOL PART No.	ASTATIC PART No.	
73		L-40	

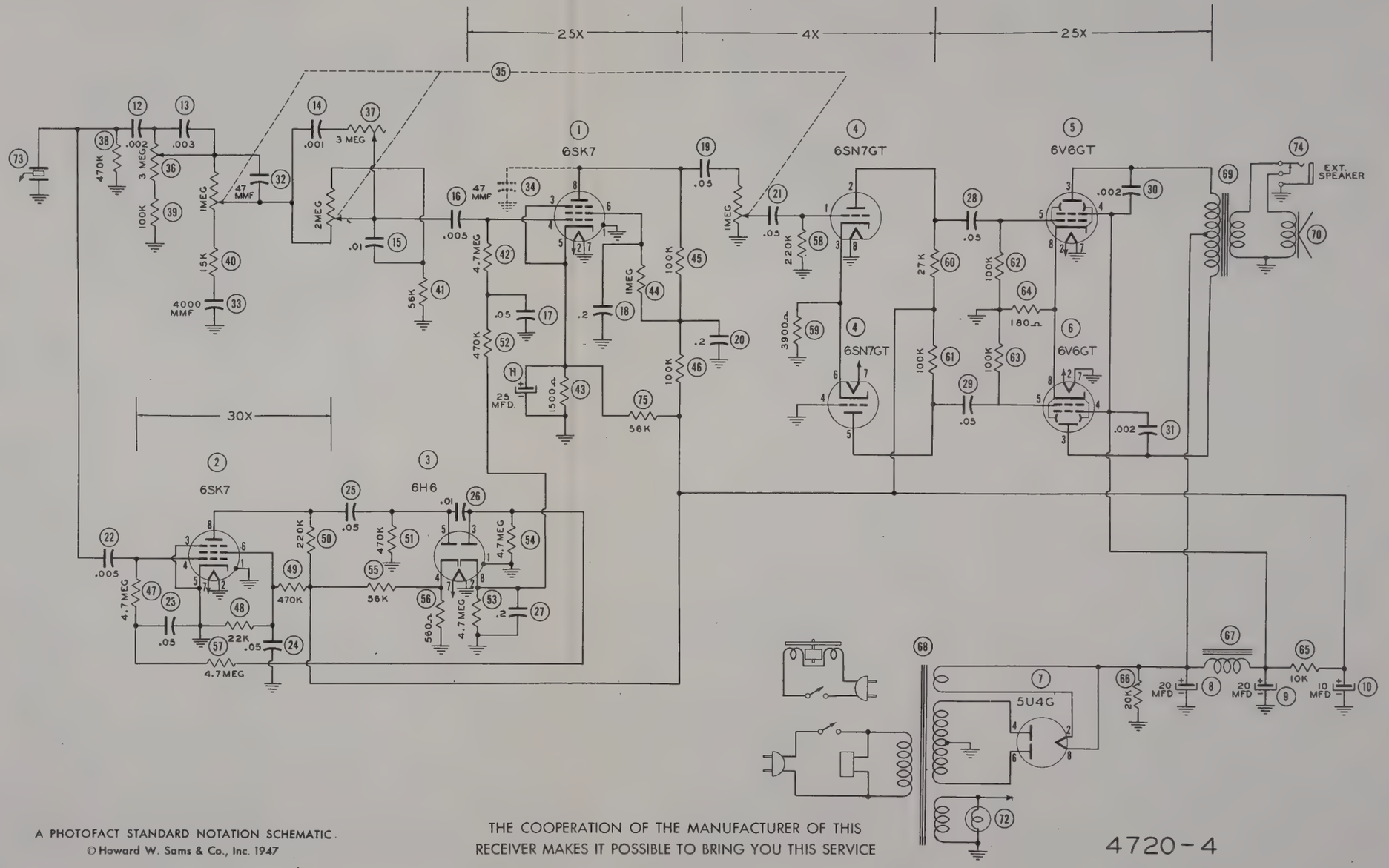
MISCELLANEOUS

ITEM No.	PART NAME	CAPITOL PART No.	NOTES
74	Jack		Ext. Speaker

DISASSEMBLY INSTRUCTIONS

1. Remove three push-on type control knobs.
2. Remove speaker plug from chassis.
3. Remove phono-pickup plug from chassis.
4. Remove cabinet light from bracket.
5. Remove three screws holding chassis in cabinet. Remove chassis from cabinet.
6. Remove four wood screws holding speaker in cabinet. Remove speaker from cabinet.





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4720-4

CLARION MODEL 11411-N
BATTERY-LINE OPERATED

CLARION MODEL 11411-N
BATTERY-LINE OPERATED

CLARION MODEL 11411-N

TRADE NAME	Clarion, Model 11411-N
MANUFACTURER	Warwick Mfg. Corp., 4640 W. Harrison St., Chicago 44, Ill.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output
POWER SUPPLY	105-125 Volts AC-DC or 6 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	.140 Amp. @ 117 Volts AC or 63MA @ 6 Volts DC and 8MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	545-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to large stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation trans. reduce dummy ant. to 200MMF to reduce hum modulation.
2	250MMFD	"	1600KC	"	"	A5	Adjust for maximum output.
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	600KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 & 4 until no further improvement can be made.

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DATE 12/47 SET #30 FOLDER #4720-5

PARTS LIST AND DESCRIPTIONS

CLARION MODEL 11411-N
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CLARION PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7B6	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CLARION PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	A18-282					UP7DJ63	● Filter
B	20	150							■ "
C	20	150							▲ "
D	100	25							Filament Bypass
6	.05	400	A16-179	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
7	.05	200	A16-170	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Power Supply
8	.005	150	A16-166		TTR-1.5-006			ZZ2D5	Output Plate Bypass
9	.005	150	A16-166		TTR-1.5-006			ZZ2D5	Audio Coupling
10	.005	150	A16-166		TTR-1.5-006			ZZ2D5	" "
11	.005	150	A16-166		TTR-1.5-006			ZZ2D5	Audio Screen Bypass
12	.005	150	A16-166		TTR-1.5-006			ZZ2D5	IF Grid Filter
13	.005	150	A16-166		TTR-1.5-006			ZZ2D5	Converter Screen Decoup.
14	.05	400	A16-179	TP426	S-4-05	TC-15	484-05	DT4S5	Filament Bypass
15	.005	150	A16-166		TTR-1.5-006			ZZ2D5	AVC Filter
16	.05	400	A16-174	TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolation
17	50		A15-191	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Audio Plate Bypass Cer.
18	100		A15-190	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter Cer.
19	100		A15-190	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
20	100		A15-190	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap. "
21	100		A15-190	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling "

CONTROLS

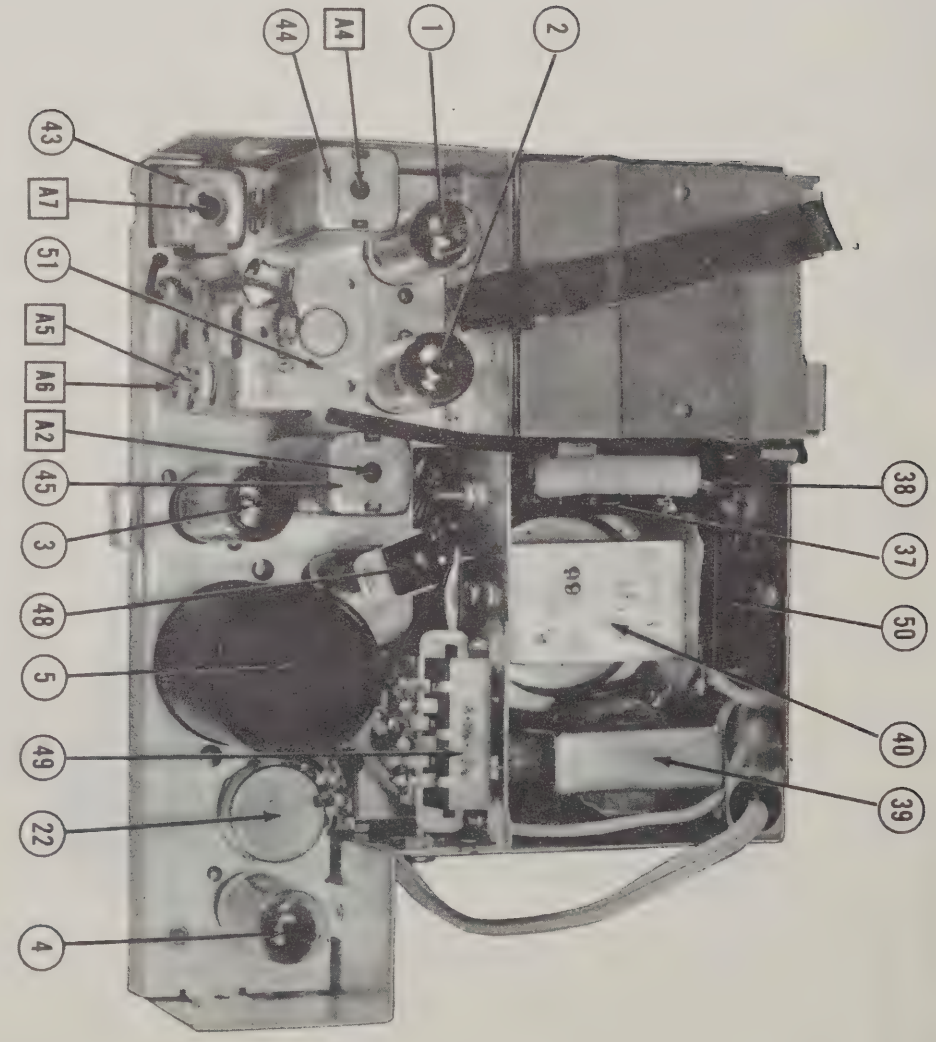
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22A	1 Meg.	½	A24-172	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 22A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CLARION PART No.	IRC PART No.	IDENTIFICATION CODES
23	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. Converter Grid
24	270Ω	½	A60-723	BW-½-270	Red-Vi.-Brn. Converter Screen Dropping
25	100KΩ	½	A60-727	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
26	10 Meg.	½	A60-728	BTS-10 Meg.	Br.-Blk.-Blue IF Grid
27	1500Ω	½	A60-729	BTS-1500	Br.-Grn.-Red Filament String
28	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	47KΩ	½	A60-730	BTS-47K	Yl.-Vi.-Or. Diode Filter
30	470Ω	½	A60-722	BTS-470	Yl.-Vi.-Brn. Filament String
31	10 Meg.	½	A60-728	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
32	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. AF Screen Dropping
33	470KΩ	½	A60-731	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
34	2.2 Meg.	½	A60-726	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
35	1500Ω	½	A60-729	BTS-1500	Br.-Grn.-Red Filament String
36	3300Ω	1	A60-724	BTA-3300	Or.-Or.-Red Filter
37A	1000Ω	10	A60-713	ABA-2000	Filament Dropping - See Note
B	1000Ω				" " "
38	160Ω	3	A60-725		Brn.-Blue-Brn. Surge Limiter

Note-On IRC replacement set slider at center.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CLARION PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
39	19000Ω	3.1Ω	750Ω	.5Ω	A80-231	A-3856	T22848	A-2900	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CLARION PART No.	JENSEN PART No.		
40	FIELD PM	VC IMP. 3.1Ω	B79-353			
41	CONE DIA. 3-3/8"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CLARION PART No.	MEISSNER PART No.	
42	Loop Ant.		1.5Ω			
43	Osc. Coil	2.5Ω	7.1Ω	B10-477		
44	Input IF	22Ω	22Ω	C10-475	16-6668	
45	Output IF	22.5Ω	22.1Ω	C10-475	16-6669	

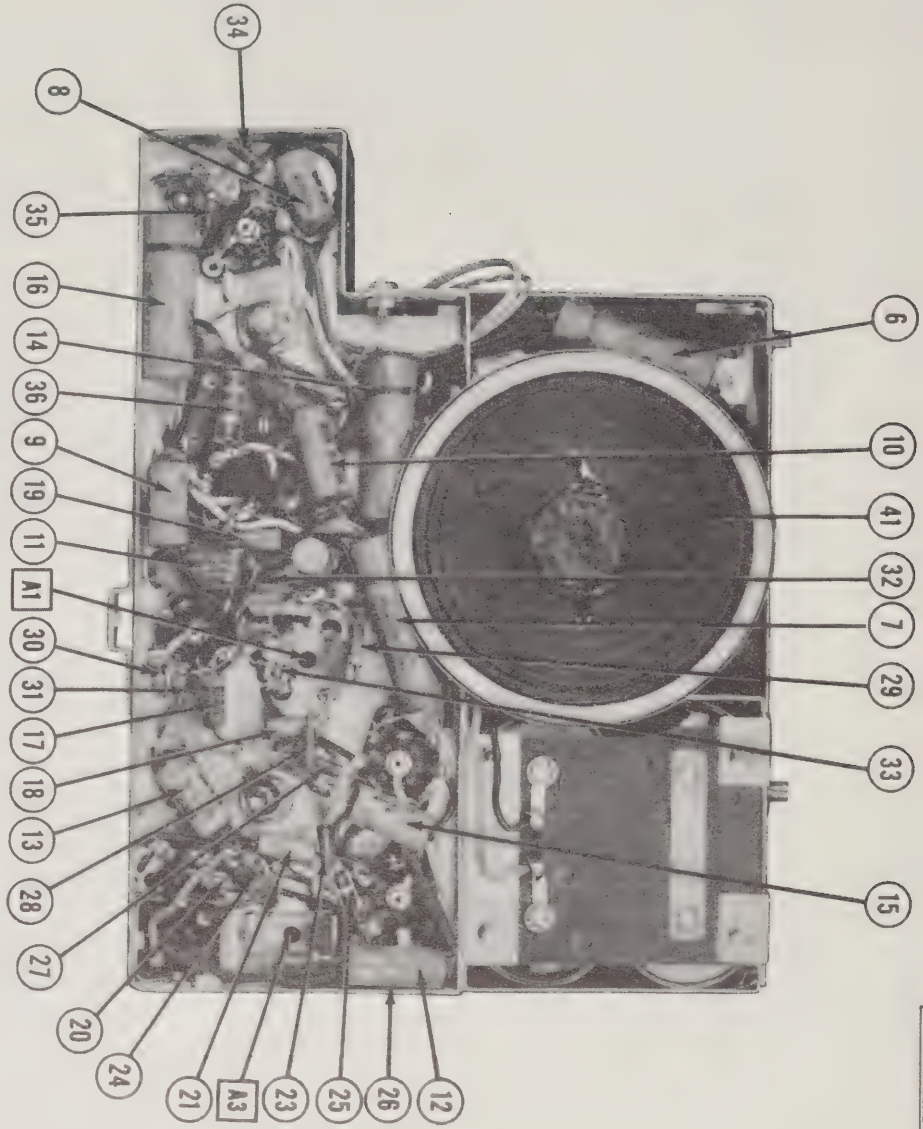
BATTERIES

ITEM No.	VOLTAGE	CLARION PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
46	6V "A"		#950			4 Used in series
47	67.5V "B"			#467		

MISCELLANEOUS

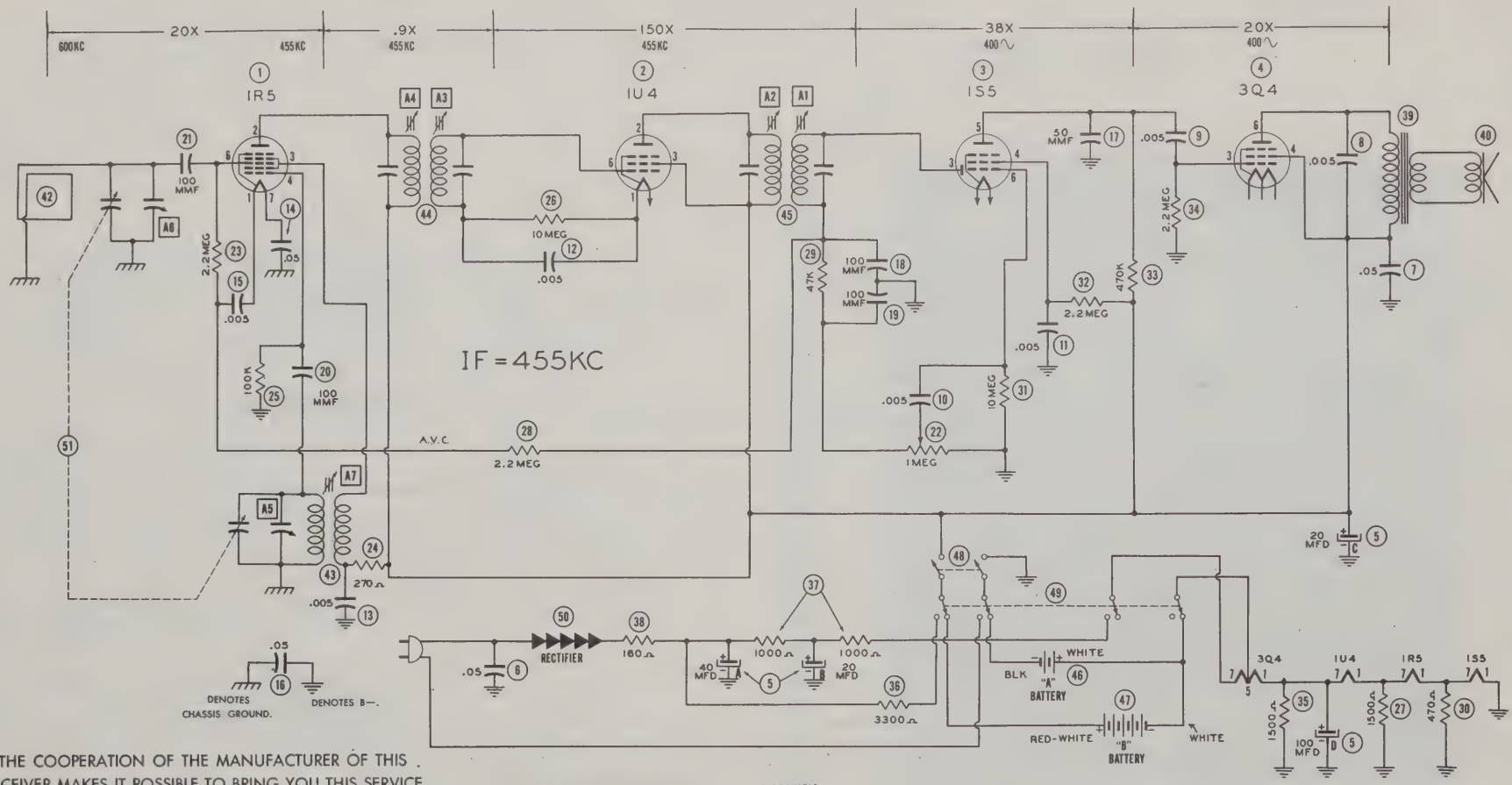
ITEM No.	PART NAME	CLARION PART No.	NOTES
48	Switch	A69-175	On-Off
49	"	A69-174	AC-DC-Batt.
50	Rectifier	A83-391	Selenium
51	2 Gang Var. Cap	B19-190	(20-430MMF, 20-158 MMF)
	Knob	C52-216	Tuning
	"	B52-217	Volume

CHASSIS—BOTTOM VIEW



CLARION MODEL 11411-N
BATTERY-LINE OPERATED

CLARION MODEL 11411-N
BATTERY-LINE OPERATED



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VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.3VDC	68VDC	64VDC	-13VDC§	1.3VDC	0V.	2.6VDC
2	1U4	2.6VDC	68VDC	68VDC	0V.	2.6VDC	.1VDC	3.9VDC
3	1S5	0V.	0V.	-.1VDC	18VDC	30VDC	0V.	1.3VDC
4	3Q4	3.9VDC	65VDC	0V.	68VDC	5.1VDC	65VDC	6.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	5.3KΩ	5.5KΩ	100KΩ	*	6 Meg.	*
2	1U4	*	5.3KΩ	5.3KΩ	INF.	*	10 Meg.	*
3	1S5	0Ω	INF.	1 Meg.	2.2 Meg.	470KΩ	10 Meg.	*
4	3Q4	*	6KΩ	2.2 Meg.	5.3KΩ	*	6KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-5

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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC line to B−.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance reading.
6 - Volume control at maximum, no signal applied for voltage measurements.

DAVID BOGEN MODEL G-50

TRADE NAME	David Bogen, Model G-50
MANUFACTURER	David Bogen Co., Inc., 663 Broadway, New York 12, N.Y.
TYPE SET	AC Operated 9 Tube Amplifier
TUBES (NINE)	Types, 6SC7 Mic. 1 Amp., 6SC7 Mic. 2 Amp., 6SC7 AF-Phono Amp., 6SL7GT AF-Phase Inv., 6SN7GT Driver,(2) 807 Power Output, 5Y3GT Rectifier, 5R4GY Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.8 Amp. @ 117 Volts AC

DAVID BOGEN
MODEL G-50

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SC7	0V.	66VDC	0V.	0V.	73VDC	.8VDC	-21VDC≠	-21VDC≠	-
2	6SC7	0V.	68VDC	0V.	0V.	73VDC	.8VDC	-21VDC≠	-21VDC≠	-
3	6SC7	0V.	87VDC	0V.	0V.	100VDC	1.3VDC	-21VDC≠	-21VDC≠	-
4	6SL7GT	0V.	140VDC	2VDC	7.2VDC	183VDC	78VDC	-21VDC≠	-21VDC≠	-
5	6SN7GT	-9VDC	290VDC	-8VDC	-9VDC	290VDC	-8VDC	-21VDC≠	-21VDC≠	-
6	807	-21VDC≠	290VDC	-20VDC	0V.	-21VDC≠	-	-	-	420VDC
7	807	-21VDC≠	290VDC	-20VDC	0V.	-21VDC≠	-	-	-	450VDC
8	5Y3GT	0V.	300VDC	0V.	300VAC	0V.	300VAC	0V.	300VDC	-
9	5R4GY	0V.	470VDC	0V.	580VAC	0V.	580VAC	0V.	470VDC	-

≠READ 6.8VAC BETWEEN FILAMENT PINS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	6SC7	0Ω	390KΩ	500KΩ	500KΩ	290KΩ	1KΩ	480Ω	480Ω	-
2	6SC7	0Ω	390KΩ	500KΩ	500KΩ	290KΩ	1KΩ	480Ω	480Ω	-
3	6SC7	0Ω	390KΩ	500KΩ	29KΩ	340KΩ	2KΩ	480Ω	480Ω	-
4	6SL7GT	500KΩ	290KΩ	3.5KΩ	300KΩ	290KΩ	200KΩ	480Ω	480Ω	-
5	6SN7GT	1 Meg.	10KΩ	1.9KΩ	1 Meg.	10KΩ	1.9KΩ	480Ω	480Ω	-
6	807	480Ω	10KΩ	540Ω	0Ω	480Ω	-	-	-	40KΩ
7	807	480Ω	10KΩ	560Ω	0Ω	480Ω	-	-	-	40KΩ
8	5Y3GT	0Ω	10KΩ	INF.	580Ω	INF.	580Ω	INF.	10KΩ	-
9	5R4GY	INF.	40KΩ	INF.	38Ω	INF.	35Ω	INF.	40KΩ	-

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum an proper output load connected.

DAVID BOGEN
MODEL G-50

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DATE 12/47 SET #30 FOLDER #4720-6

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DAVID BOGEN PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. 1 Amp.	6SC7	6SC7	8S	
2	Mic. 2 Amp.	6SC7	6SC7	8S	
3	AF-Phono Amp.	6SC7	6SC7	8S	
4	AF-Phase Inv.	6SL7GT	6SL7GT	8BD	
5	Driver	6SN7GT	6SN7GT	8BD	
6	Power Output	807	807	T-5BB	
7	Power Output	807	807	T-5BB	
8	Rectifier	5Y3GT	5Y3GT	5T	
9	"	5R4GY	5R4GY	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

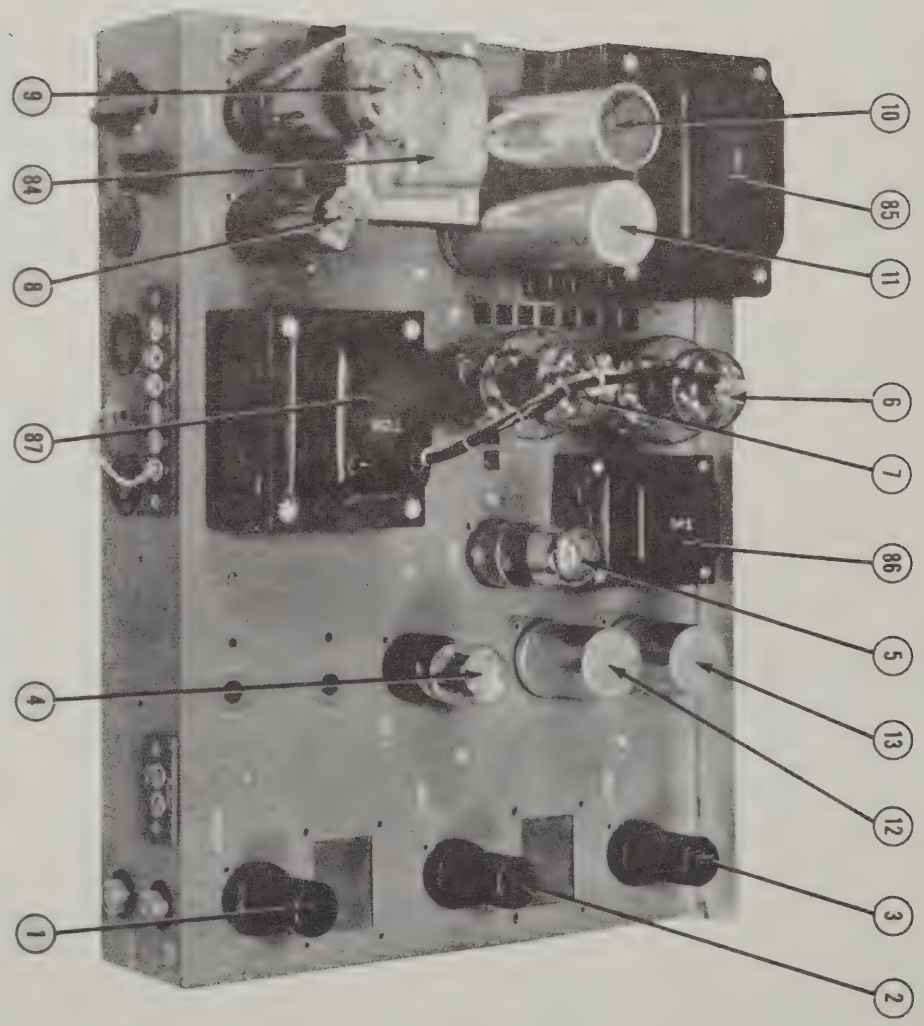
ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DAVID BOGEN PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10A	8	450		RM262	D-2x8-450	CL-88	GLS-450-8-8	KR588A	Filter - Blue
B	8	450							" - Red
11	4	600		HS693	D-4-600	AP-46	GL600-4	KR604	"
12A	10	450		FP231	DH-2x8-450	EL-210	AF2222J	UP111145	▬ Filter
B	10	450							▲ "
13A	5	450		FP434	DY-4x10-450	EL-410	AF2222J	UP111145	▬ Decoupling
B	5	450							■ "
C	5	450							▲ "
D	5	450							"
14	50	50		TC39	M-50-50	TA-550	PRS50-50	BR505	Bias Filter
15	50	25		TC29	M-50-25	TA-50	PRS25-50	BR502	Cathode Bypass
16	50	25		TC29	M-50-25	TA-50	PRS25-50	BR502	" "
17	50	25		TC29	M-50-25	TA-50	PRS25-50	BR502	" "
18	50	25		TC29	M-50-25	TA-50	PRS25-50	BR502	" "
19	100	25		TC2501	M-100-25	UHC-102	PRS25-100	BRH251	" "
20	100	25		TC2501	M-100-25	UHC-102	PRS25-100	BRH251	" "
21	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
22	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
23	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
24	.001	600		TP404	S-6-001	TC-21	684-001	D66D1	Tone Comp.
25	.05	400		TP406	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
26	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Tone Comp.
27	.25	400		TP430	S-4-25	TC-2	484-25	DT4P25	Audio Coupling
28	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
29	.25	400		TP430	S-4-25	TC-2	484-25	DT4P25	" "
30	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
31	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Filter
32	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Output Shunt
33	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Comp.
34	100	500		MCB235	MOS.5-31	MS-31	1469-001	5R5T1	Tone Comp. Silver
35	100	500		MCB235	MOS.5-31	MS-31	1469-001	5R5T1	" " "
36	240	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	" "
37	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	" " *

*Not used in all models.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DAVID BOGEN PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
38A	25KΩ	½	V259	MR24		M-41-W	Mike 1 Control
B	Shaft		Not Req.	Not Req.		Not Req.	Attach to 38A per instructions
39A	25KΩ	½	V259	MR24		M-41-W	Mike 2 Control
B	Shaft		Not Req.	Not Req.		Not Req.	Attach to 39A per instructions
40A	500KΩ	½		MR48	D13-133	M-60-Z	Phono Control
B	Shaft			Not Req.	A	Not Req.	Attach to 40A per instructions
41	1 Meg.	½	V129				Tone Control

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA IRC PART No.	IDENTIFICATION CODES
42	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. 1st Mic. Amp. Grid
43	1000Ω	½		BTS-1000	Br.-Blk.-Red 1st Mic. Amp. Cathode
44	240KΩ	½		BTS-270K	Red-Yl.-Yl. 1st Mic. Amp. Plate Load
45	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. 1st Mic. Amp. Grid
46	150KΩ	½		BTS-150K	Br.-Grn.-Yl. 1st Mic. Amp. Plate Load
47	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Feedback
48	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
49	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. 2nd Mic. Amp. Grid
50	1000Ω	½		BTS-1000	Br.-Blk.-Red 2nd Mic. Amp. Cathode
51	240KΩ	½		BTS-270K	Red-Yl.-Yl. 2nd Mic. Amp. Plate Load
52	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. 2nd Mic. Amp. Grid
53	150KΩ	½		BTS-150K	Br.-Grn.-Yl. 2nd Mic. Amp. Plate Load
54	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Feedback
55	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Decoupling
56	240KΩ	½		BTS-220K	Red-Yl.-Yl. Series Phono
57	24KΩ	½		BTS-22K	Red-Yl.-Or. Isolation
58	24KΩ	½		BTS-22K	Red-Yl.-Or. Isolation
59	2000Ω	½		BTS-2200	Red-Blk.-Red 1st AF Cathode
60	240KΩ	½		BTS-270K	Red-Yl.-Yl. 1st AF Plate Load
61	47KΩ	1		BTA-47K	Yl.-Vi.-Or. 1st AF Plate Decoupling
62	47KΩ	1		BTA-47K	Yl.-Vi.-Or. Phono Amp. Plate Load
63	24KΩ	1		BTA-22K	Red-Yl.-Or. Decoupling
64	10KΩ	1		BTA-10K	Br.-Blk.-Or. Decoupling
65	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Tone Compensation
66	500KΩ	½		BTS-470K	Grn.-Blk.-Yl. 2nd AF Grid
67	470Ω	½		BTS-470	Yl.-Vi.-Br. 2nd AF Cathode
68	3300Ω	½		BTS-3300	Or.-Or.-Red 2nd AF Cathode
69	3900Ω	½		BTS-3900	Or.-White-Red Phase Inverter Cathode
70	240KΩ	½		BTS-220K	Red-Yl.-Yl. Phase Inverter Cathode
71	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Phase Inverter Cathode - See Note
72	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Grid
73	240KΩ	½		BTS-270K	Red-Yl.-Yl. Phase Inverter Plate Load
74	240KΩ	½		BTS-270K	Red-Yl.-Yl. 2nd AF Grid
75	10KΩ	1		BTA-10K	Br.-Blk.-Or. Decoupling
76	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Feedback
77	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Driver Grid
78	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. "
79	1500Ω	½		BTS-1500	Br.-Grn.-Red Driver Cathode
80	1500Ω	½		BTS-1500	Br.-Grn.-Red Driver Cathode
81A	10KΩ	50		EP-50K	Bleeder
B	40KΩ				"
82	1000Ω	20		DHA-1000	Bias Adjustment

Note-Not used in all models.

FILTER CHOKE

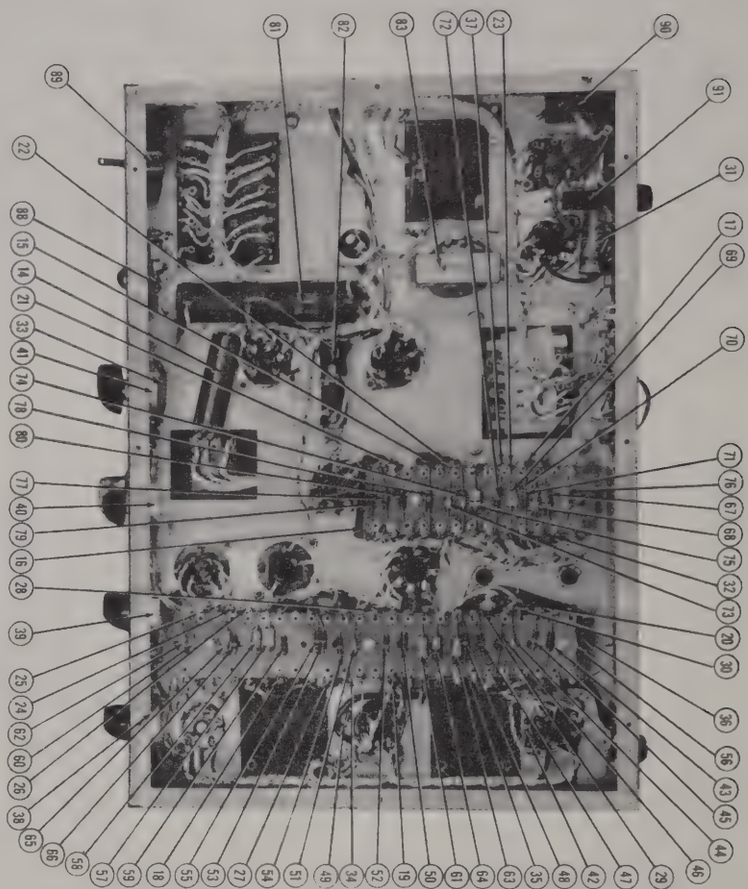
ITEM NO.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA DAVID BOGEN PART NO.	REPLACEMENT DATA STANCOR PART NO.	REPLACEMENT DATA THORDARSON PART NO.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
83	.062	190Ω	5.5 Henries	T501B	C-2303#			
84	.16	50Ω	2.5 Henries	T510B		T20C55†	C-2304†	

#Drill one new mounting hole. †Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDARSON PART No.	REPLACEMENT DATA MERIT PART No.
85	117V AC @ 1.8A	600V CT @ .160A	1160V CT @ .062A	5.5V AC @ 2.0A	T361B			
			SEC. 4	SEC. 5				
			5.5V AC @ 2.0A	6.8V AC @ 4.6A				

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER))

ITEM No.	RATING INDUCTANCE	RATING DC RES.	REPLACEMENT DATA DAVID BOGEN PART No	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
86	10 Henries CT	140Ω CT	T119B		T20D78‡		‡Connect primary only.

TRANSFORMER (OUTPUT)

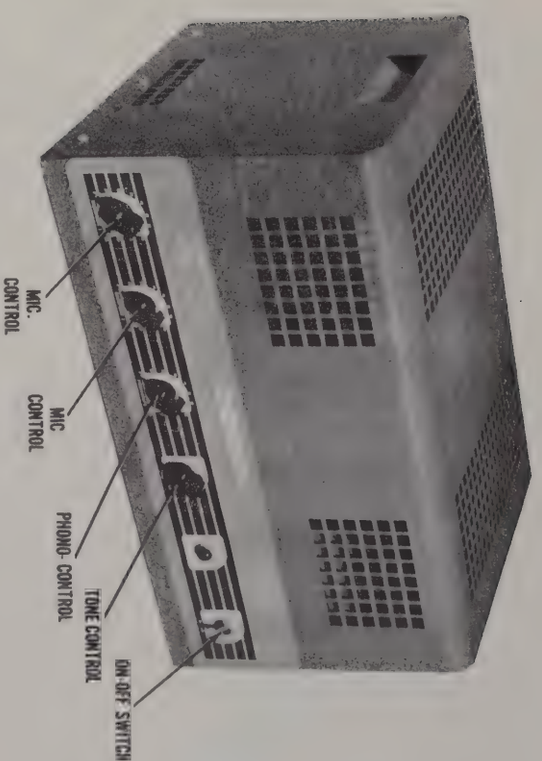
ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
87	3000Ω CT	4Ω	62Ω CT	.2Ω	T256B		T22S72$		$Drill new mounting holes.
		8Ω		.25Ω					
		15Ω		.3Ω					
		70V		4Ω					
		140V		8Ω					

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA DAVID BOGEN PART No.	REPLACEMENT DATA	INSTALLATION NOTES
88	Bayonet	6-8	0.25	Blue			Type 44

MISCELLANEOUS

ITEM No.	PART NAME	DAVID BOGEN PART No.	NOTES
89	On-Off Switch		(SPST)
90	Switch		Interlock
91	Fuse		3 Amp.



The Bogen amplifier Model G-50 has its output connection terminated at strips marked OUTPUT. Standard speaker voice coil impedances of 4, 8 and 15 ohms are provided. In addition, two constant voltage taps of 70 and 140 volts, respectively, are provided. Speaker lines may be connected directly to the output strip, connections being made to Common, or #1 terminal, and to the taps required. This amplifier is also provided with two built-in speaker sockets. Connections are made to these sockets by standard 5 prong connector plugs. The impedance or voltage at the sockets may be selected by connecting the lug on the flexible lead to the desired terminal on the output strip.

IMPEDANCE TAP: For speaker line lengths of 25 to 30 feet, use the most convenient output tap, depending on number and type speakers used and power to be delivered to each speaker. For longer distances between amplifier and speakers, the following figures may be used as a guide. Using standard #18 speaker wire, the maximum lengths of line for use of the voice coil impedances are as follows:

4 ohms - 45 feet, 8 ohms - 90 feet, 15 ohms - 180 feet

These lengths of line give a loss of approximately 15% of the output power. For longer lines the constant voltage outputs should be used.

Correct speaker matching transformer taps, to give desired speaker power when connected to one of the constant voltage outputs, may be calculated by means of the formula: $Z = \frac{E^2}{P}$

For the 140 volt tap: Required Impedance = $\frac{20{,}000}{\text{Desired Power}}$

Example: To obtain a 2 watt output $Z = \frac{20{,}000}{2} = 10{,}000$ ohms

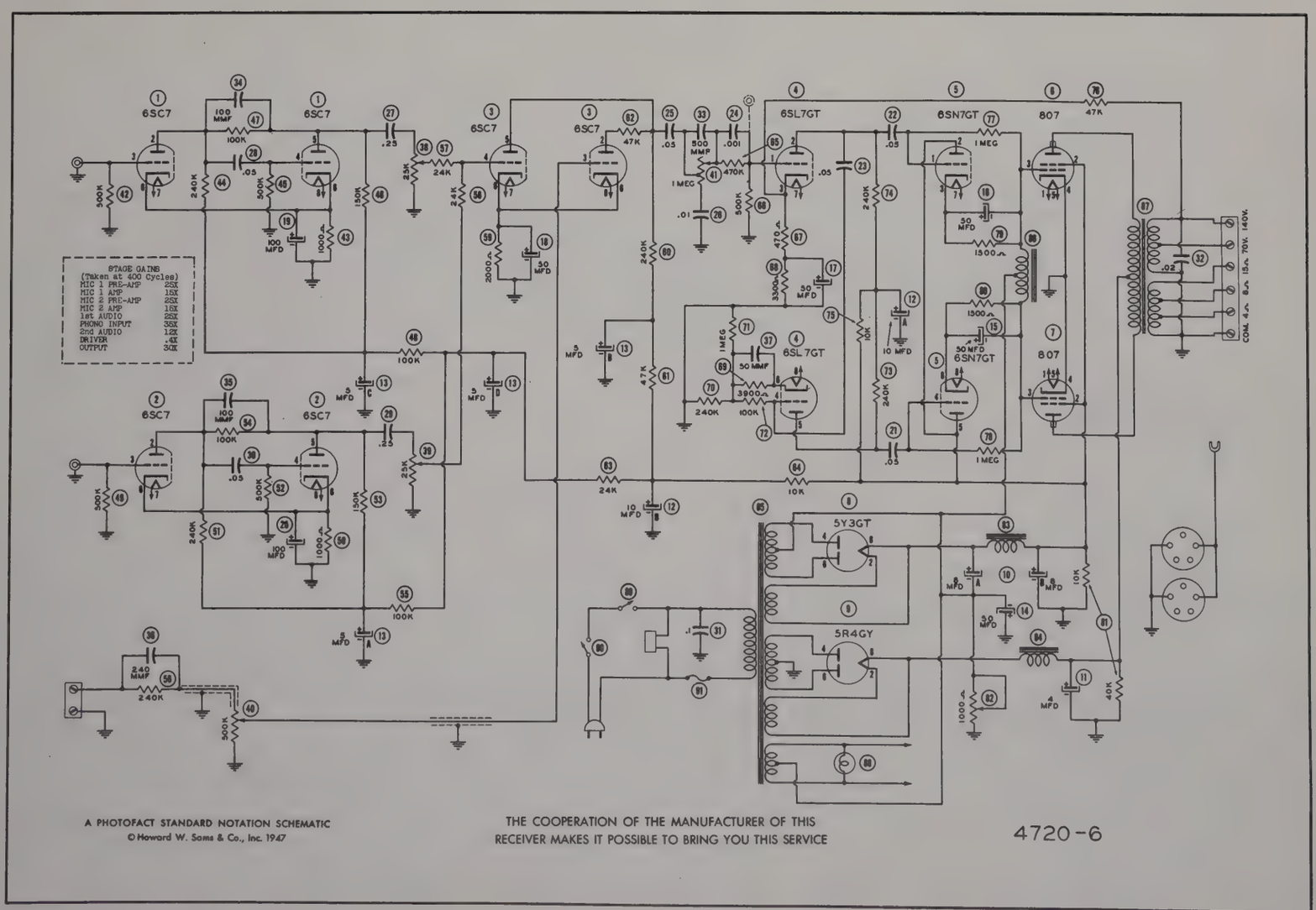
For the 70 volt tap: Required Impedance = $\frac{5{,}000}{\text{Desired Power}}$

Example: To obtain a 5 watt output $Z = \frac{5{,}000}{5} = 1{,}000$ ohms

The recommended BOGEN transformer and proper impedance tap for commonly used speaker input powers are tabulated below. Impedances listed are based on a nominal 8 ohm voice coil impedance. If a 15 ohm voice coil speaker is employed, use a transformer incorporating a tap marked at 1/2 the value shown on the table. For example, to obtain 1 watt on a 70 volt line with an 8 ohm voice coil speaker, the table indicates use of a transformer tapped at 5,000 ohms. If a 15 ohm voice coil speaker is used, a tap marked 2,500 ohms should be employed. If a 4 ohm voice coil speaker is employed use a transformer incorporating a tap marked at 2 times the value shown on the table. In the example above, the tap for a 4 ohm speaker will be 10,000 ohms.

Nominal Power	For 70 V. Tap	Transformer	For 140 V. Tap	Transformer
1/2 Watt	10,000Ω	T45C		
1 Watt	5,000Ω	T45C		
2 Watts	2,500Ω	T25C	10,000Ω	T45C
5 Watts	1,000Ω	T5B	4,000Ω	T25B
10 Watts	500Ω	T5B	2,000Ω	T5B
20 Watts			1,000Ω	T5A

DATE 12/47 SET #30 FOLDER #4720-6



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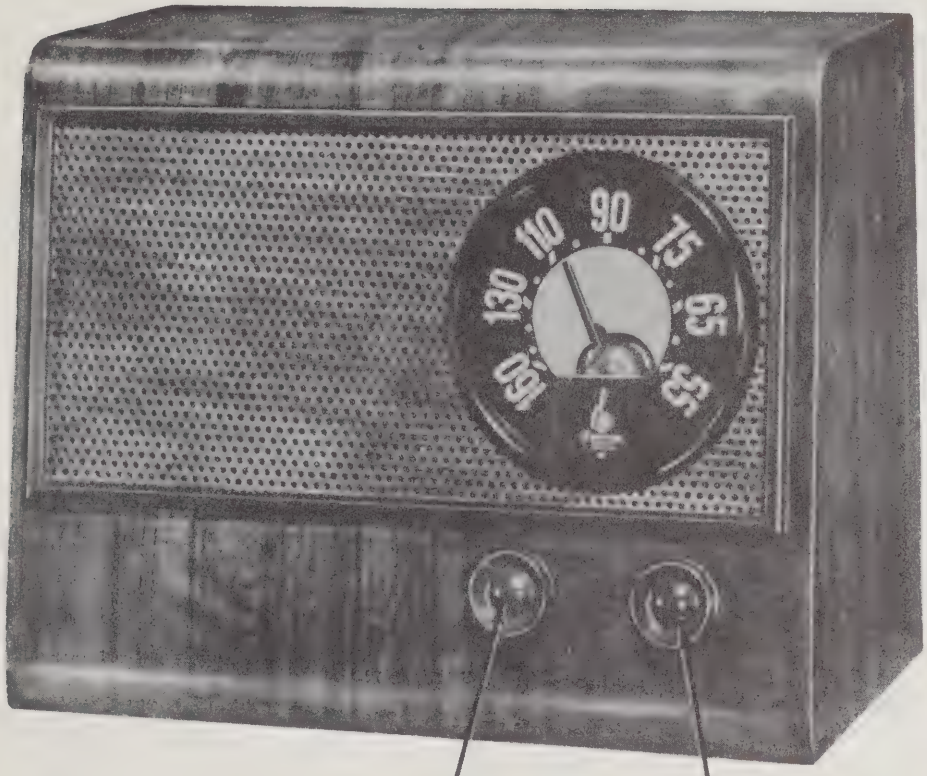
4720-6



EMERSON MODEL 519

TRADE NAME	Emerson, Model 519 (Ch. 120030)
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th Ave., New York, N.Y.
TYPE SET	AC-DC Operated Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 12SA7 Converter, 12SK7 IF Amp., 12SQ7 Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier
POWER SUPPLY	105-125 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn variable fully closed and set pointer at horizontal position. Use isolation trans. if available. If not, connect capacitor in series with the low side of the signal generator and B-. Set volume control at maximum volume and keep output from signal generator no higher than is necessary to obtain output reading. Use insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to stator of rear section of variable. Low side to B-.	455KC	High freq. end (Variable fully open.)	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation trans. is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1425KC	1425KC	"	A5	Connect output of signal generator to loop of a few turns of wire and radiate signal into receiver loop. Space at least 15 inches. Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A6	"

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Printed in U. S. of America
DATE 12/47 SET #30 FOLDER #4720-7

PARTS LIST AND DESCRIPTIONS

EMERSON MODEL 519 (Ch. 120030)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		EMERSON PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7	12SA7	8R	
2	IF Amp.	12SK7	12SK7	8N	
3	Det.-AVC-AF	12SQ7	12SQ7	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	EMERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	30	150	925000	2N520	DSB-5030-150	TA-530	PRSA150-50-30	BRD3515	Filter - Red
B	50	150							" - Green
7	.2	200	920050	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
8	.05	400	920030	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.02	400	920020	TP423	S-4-02	TC-12	484-02	DT4S2	50L6 Plate Bypass
10	.02	600	920020	TP412	S-6-02	TC-12	684-02	DT6S2	Audio Coupling
11	.001	600	920170	TP404	S-6-001	TC-21	684-001	DT6D1	Plate Bypass
12	.002	600	920010	TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
13	.1	200	920040	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
14	220	500	910000	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	IF Bypass Vol. Cont.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	500KΩ	½	390010	UM156	D11-133	AM-58-S	Volume Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 15A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

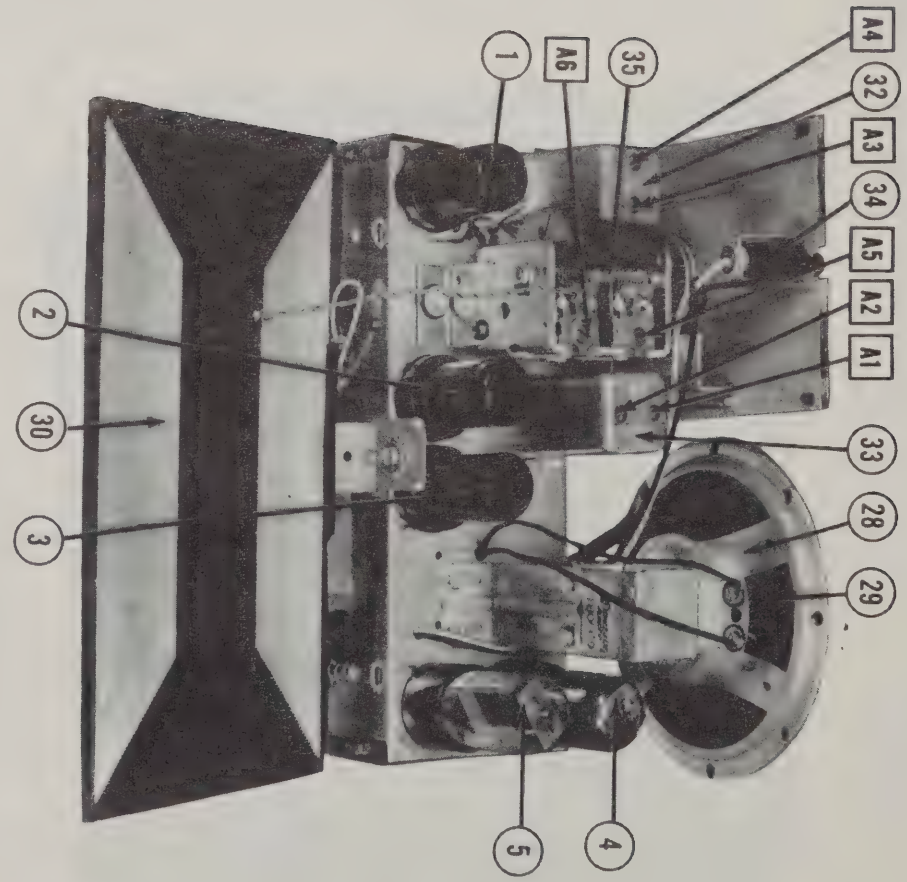
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	EMERSON PART No.	IRC PART No.	
16	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
17	22KΩ	½	310810	BTS-22K	Red-Red-Or. Osc. Grid
18	3.3 Meg.	½	321330	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
19	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue 1st AF Grid
20	470KΩ	½	321130	BTS-470K	Yl.-Vi.-Yl. 1st AF Plate Load
21	470KΩ	½	321130	BTS-470K	Yl.-Vi.-Yl. Output Grid
22	150Ω	½	340290	BW-½-150	Br.-Grn.-Blk. Output Cathode
23	1000Ω	1	370490	BTA-1000	Br.-Blk.-Red Filter
24	220KΩ	½	321050	BTS-220K	Red-Red-Yl. Line Isolating
25	15Ω	1	397040	BW-1-15	Br.-Grn.-Blk. Rectifier Ballast
26	10Ω	½	340010	BW-½-10	Br.-Blk-Blk. Pilot Light Ballast

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		EMERSON PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
27	20100Ω	3.2Ω	215Ω tapped @ 8Ω	.85Ω	734000	A-3876*		A-2928*	*Requires one new mounting hole. Add aditional filter to reduce hum level.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: EMERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-105#		#Fabricate new mounting
28	PM	3.2Ω	180000	Mod. P5-X		bracket.
	CONE DIA.	VC DIA.				
29	4-5/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

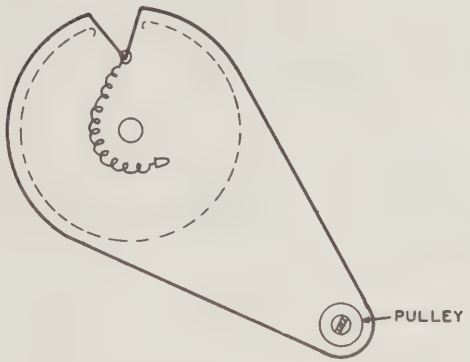
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	MEISSNER PART No.	
30	Loop Ant.		1.8Ω	700200		Alternate 700000
31	Osc. Coil	.5Ω	5.5Ω	716010		
32	Input IF	28Ω	18Ω	720000	16-6666	
33	Output IF	23Ω	22Ω	720100	16-6667	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: EMERSON PART No.		INSTALLATION NOTES
34	Bayonet	6-8	0.15	Brown	807000		Type 47

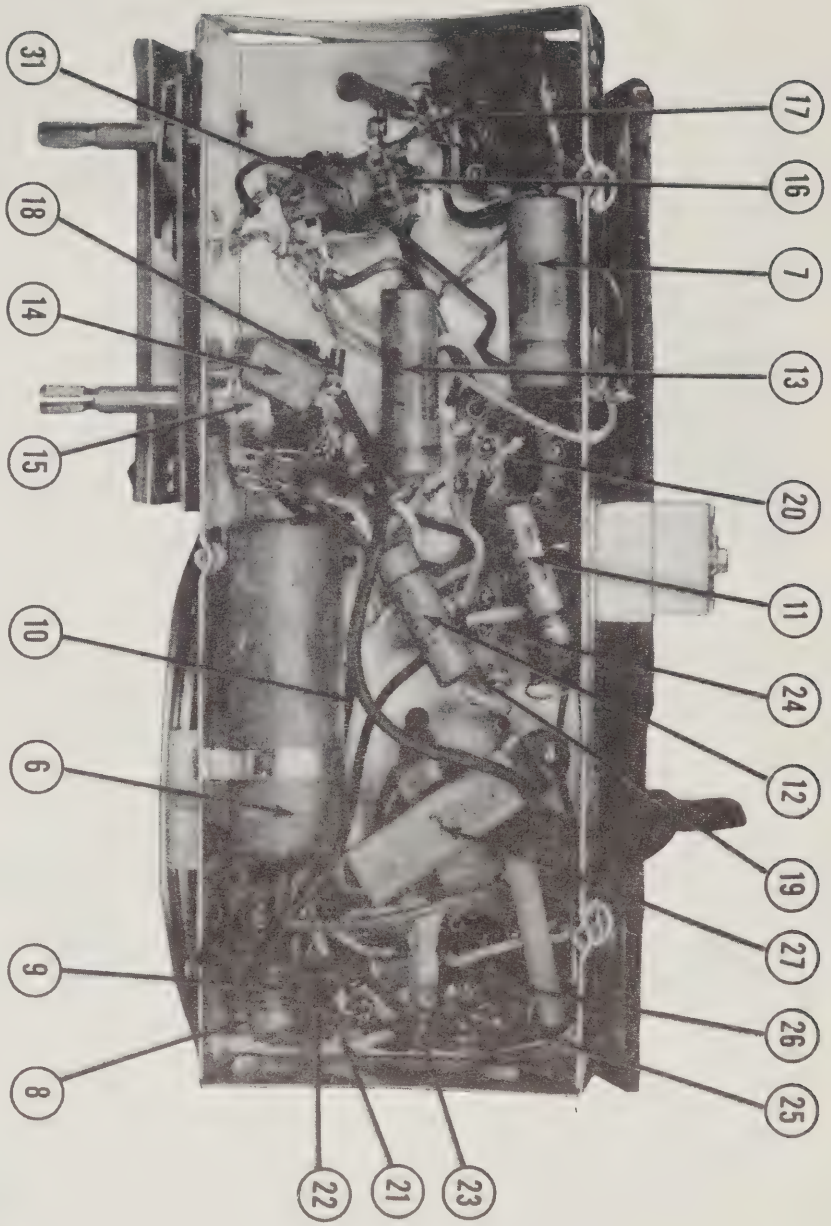
MISCELLANEOUS

ITEM No.	PART NAME	EMERSON PART No.	NOTES
35	Tuning Cap.	900160	2 Gang Variable Cap.
	Dial	520470	Crystal
	Dial Pointer	525120	



DIAL CORD DRIVE

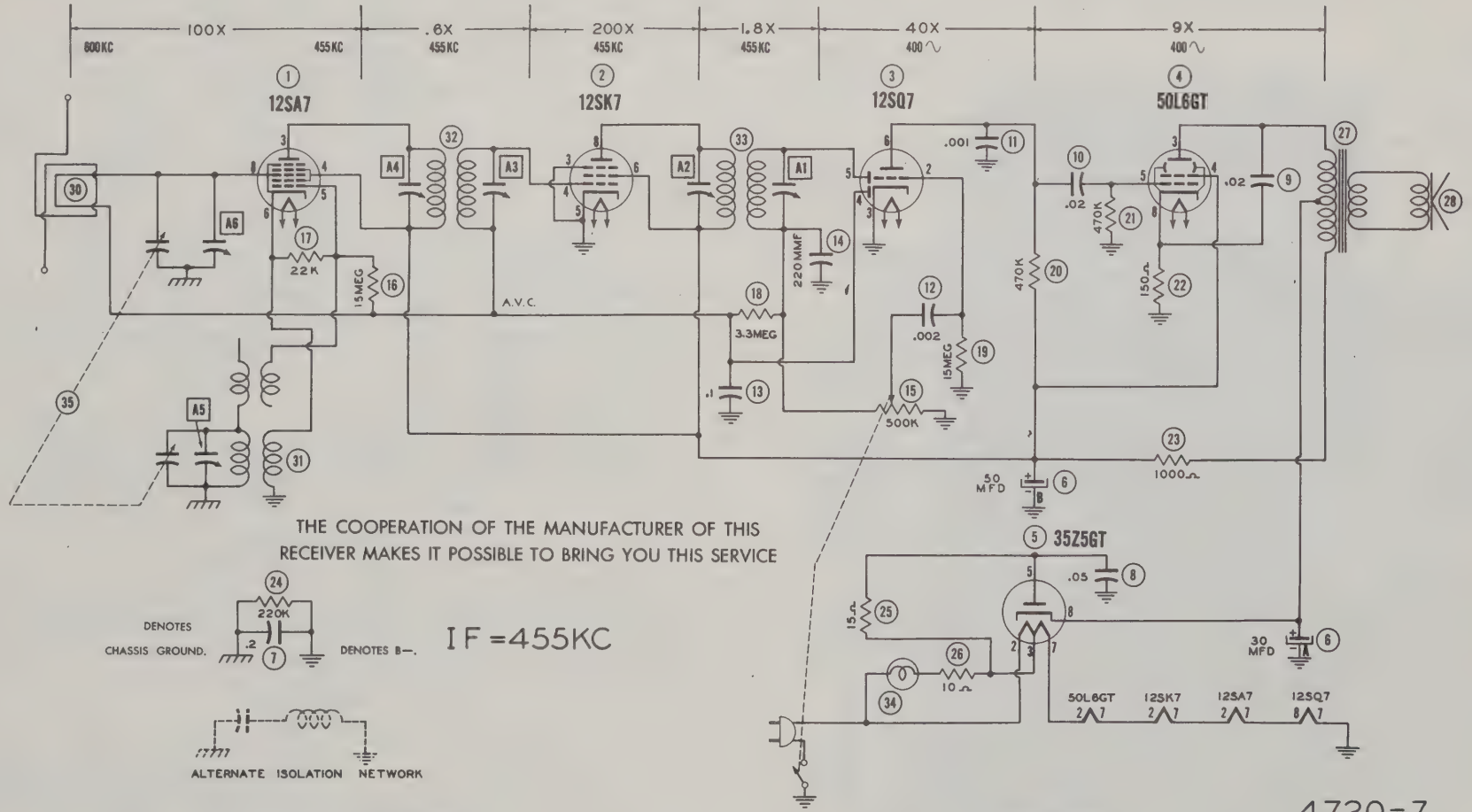
CHASSIS—BOTTOM VIEW



DATE 12/47 SET #30 FOLDER #4720-7

EMERSON MODEL 519 (Ch. 120030)

EMERSON MODEL 519 (Ch. 120030)



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4720-7

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	0V.	24VAC	89VDC	89VDC	§-4.4VDC	0V.	12VAC	-.5VDC
2	12SK7	0V.	36VAC	0V.	-.5VDC	0V.	89VDC	24VAC	89VDC
3	12SQ7	0V.	-.55VDC	0V.	-.5VDC	-.4VDC	57VDC	0V.	12VAC
4	50L6GT	0V.	87VAC	108VDC	89VDC	0V.	0V.	36VAC	5.6VDC
5	35Z5GT	0V.	117VAC	112VAC	114VDC	111VAC	113VAC	87VAC	114VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7	180KΩ	23Ω	25KΩ	25KΩ	20.5KΩ	.7Ω	12Ω	2.9 Meg.
2	12SK7	180KΩ	35Ω	0Ω	2.9 Meg.	0Ω	25KΩ	23Ω	25KΩ
3	12SQ7	180KΩ	15 Meg.	0Ω	2.9 Meg.	470KΩ	495KΩ	0Ω	12Ω
4	50L6GT	INF.	80Ω	25KΩ	25KΩ	420KΩ	0Ω	35Ω	130Ω
5	35Z5GT	INF.	105Ω	102Ω	25KΩ	115Ω	108Ω	80Ω	25KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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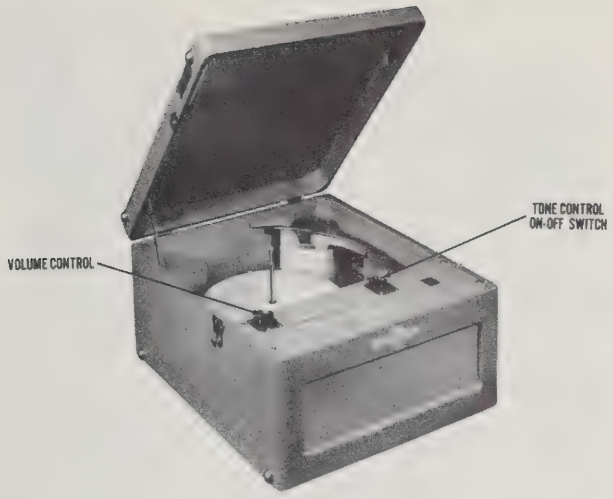
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

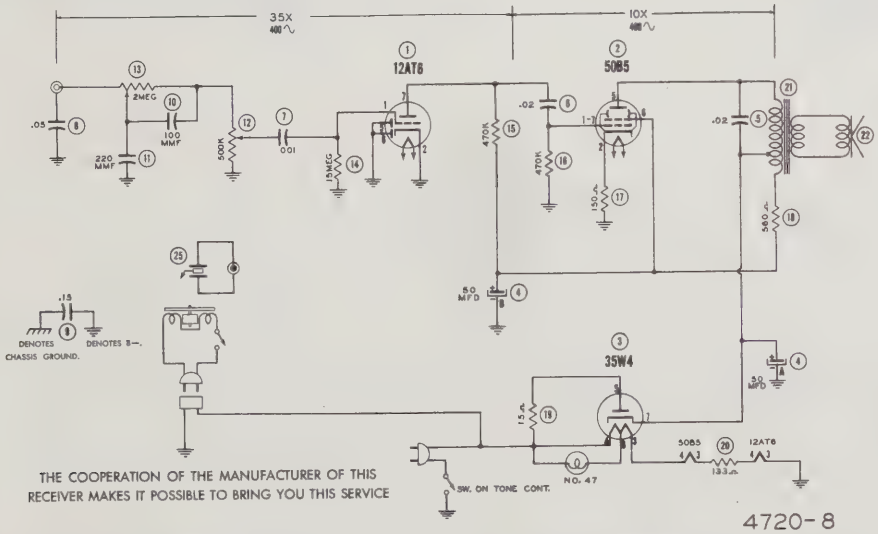
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



EMERSON MODEL 548

TRADE NAME	Emerson, Model 548 (Ch. 120051)
MANUFACTURER	Emerson Radio & Phono Corp., 111 8th Ave., New York, N.Y.
TYPE SET	AC Operated Portable Automatic Record Player with 3 Tube Amp. & Speaker.
TUBES (THREE)	Types, 12AT6 AF Amp., 50B5 Power Output, 35W4 Rectifier.
POWER SUPPLY	105-125 Volts AC RATING .240 Amp. @ 117 Volts AC



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AT6	-.7VDC	0V.	0V.	12VAC	0V.	0V.	50VDC
2	50B5	0V.	9VDC	31.5VAC	80VAC	120VDC	125VDC	0V.
3	35W4	125VDC	0V.	80VAC	117VAC	115VAC	115VAC	127VDC

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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	12AT6	15 Meg.	0Ω	0Ω	13Ω	0Ω	0Ω	700KΩ
2	50B5	500KΩ	165Ω	135Ω	180Ω	60KΩ	80KΩ	500KΩ
3	35W4	60KΩ	INF.	180Ω	215Ω	230Ω	210Ω	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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DATE 12/47 SET #30 FOLDER #4720-8

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: EMERSON PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	12AT6	12AT6	7BT	
2	Power Output	50B5	50B5	7BZ	
3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
4A	50	150	925009	2N521	DSB-2x50-150	UT-501	PRSA150-50-	EZ5515	Filter - Red
B	50	150				UT-501	50		Blue
5	.02	400	920020	TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
6	.02	400	920020	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
7	.001	600	920170	TP404	S-6-001	TC-22	684-001	DT6D2	" "
8	.05	400	920030	TP426	S-4-05	TC-15	484-05	DT4S5	Phono Isolation
9	.15	200	920420	TP417	S-4-15	TC-1	484-15	DT4P1	Line Isolation
10	100		910220	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Comp.
11	220		910000	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	" "

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
12A	500KΩ	½	390016	MK401	D13-133	AM-60-Z	Volume Control 390180
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 12A per instructions
13A	2 Meg.	½	390370	MK403	D13-139	AM-66-Z	Tone Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 13A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: EMERSON PART No.	IRC PART No.	IDENTIFICATION CODES
14	15 Meg.	½	397000	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
15	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
16	470KΩ	½	351130	BTS-470K	Yl.-Vi.-Yl. Output Grid
17	150Ω	1	370290	BW-1-150	Br.-Grn.-Br. Output Cathode
18	560Ω	½	340430	BTS-560	Grn.-Blue-Br. Filter
19	15Ω	½	340050	BW-½-15	Br.-Grn.-Blk. Rectifier Ballast
20	133Ω	5	394160		Line Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: EMERSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
21	2010Ω	3.4Ω	224Ω tapped @ 9Ω	.9Ω	734000	A-3876*		A-2928*	*Add extra filter to reduce hum level.

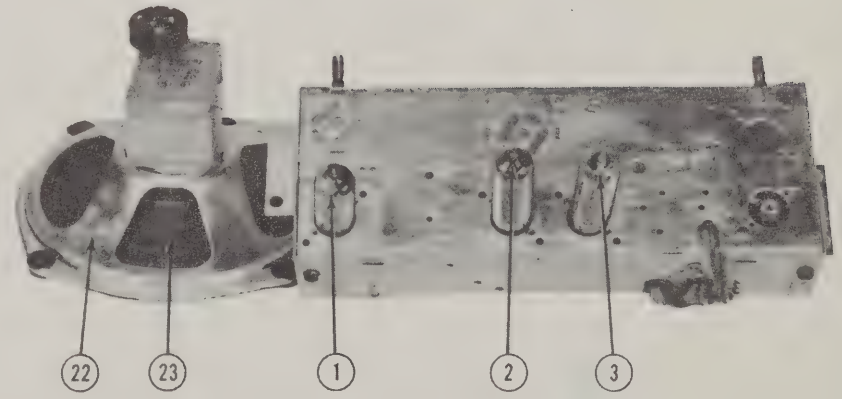
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: EMERSON PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-108		
22A	PM	3.4Ω	180025	Mod. P6-X		
B	PM	3.2Ω	180011	ST-110 Mod. P6-V		
	CONE DIA.	VC DIA.				
23A	6"	½"	NRR-UCSU			
B	6"	½"	NRR-UCSU			

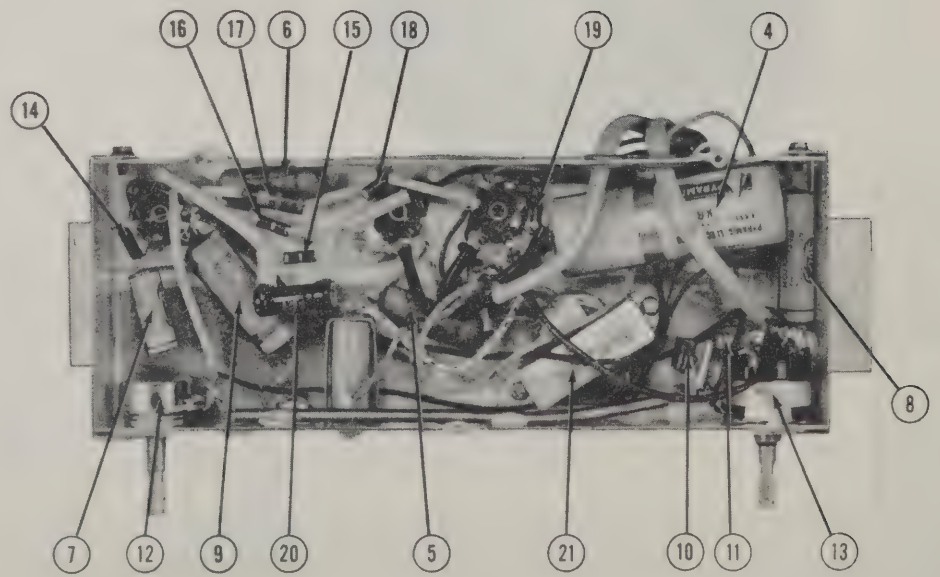
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: EMERSON PART No.	ASTATIC PART No.	REMARKS
25		L-70-A	

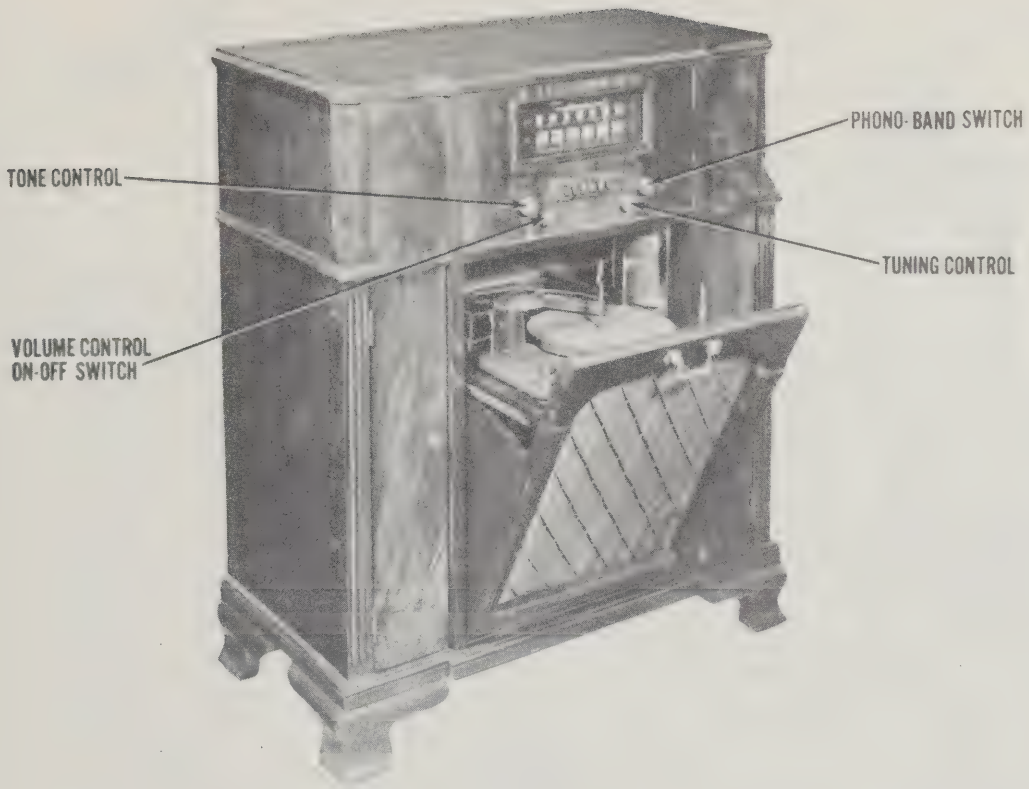
CHASSIS—TOP VIEW



CHASSIS—BOTTOM VIEW



FIRESTONE (AIR CHIEF) MODEL
4-A-42 (Code 117-7-4A42)



FIRESTONE (AIR CHIEF) MODEL
4-A-42 (Code 117-7-4A42)

AIR CHIEF MODEL 4-A-42

TRADE NAME	Airchief, Model 4-A-42 (Code 177-7-4A42)
SUPPLIER	The Firestone Tire & Rubber Co., 1200 Firestone Parkway, Akron, Ohio
TYPE SET	AC Operated Combination Phono-Radio AM-FM Superheterodyne with Loop Antenna
TUBES (TEN)	Types, 6AG5 FM RF Amp., 6SB7Y FM Converter, 6SG7 AM RF Amp.-FM IF Amp., 6SA7 AM Converter, 6SF7 AM-FM IF Amp.-AM Det., 6H6 FM Det.-AVC, 6SL7GT AF-Phase Inv., (2) 6V6GT Power Output, 5Y3GT Rectifier
POWER SUPPLY	110-120 Volts AC RATING .610 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC FREQ. MOD. 87.5-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

Never adjust AM-IF transformers without rechecking FM-IF alignment.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	200MMFD	High side to blue lead from loop ant. socket. Low side to chassis.	455KC	BC (center position)	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output.
2	200MMFD	"	1600KC	"	1600KC	"	A5	" " " "
3	200MMFD	"	1500KC	"	Tune for maximum output.	"	A6	" " " "
4	200MMFD	"	600KC	"	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further increase in output can be obtained.

FOR FM ALIGNMENT SEE LAST PAGE OF THIS FOLDER.

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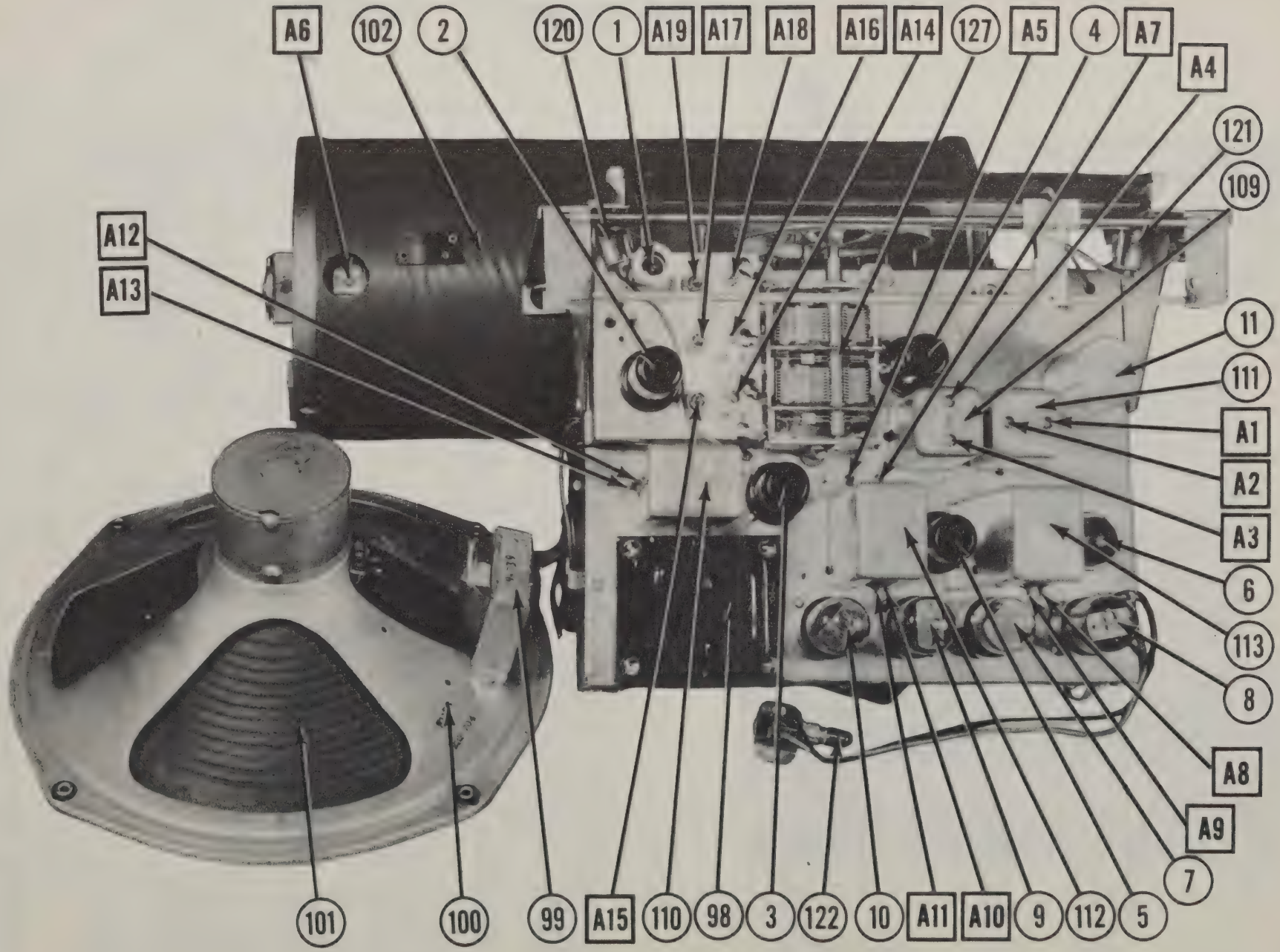

A6
102
2
120
1
A19
A17
A18
A16
A14
127
A5
4
A7
A4
121
109
A12
A13
11
111
A1
A2
A3
6
113
8
A8
A9
7
101
100
99
A15
110
98
3
122
10
A11
A10
9
112
5

A
B
B1
B2
B3
B4
B5
B6
B7
B8
B9
B10

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIR CHIEF PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM-RF Amp.	6AG5	6AG5	7BD	
2	FM Converter	6SB7Y	6SB7Y	8R	
3	AM RF Amp.-FM IF Amp.	6SG7	6SG7	8BK	
4	AM Converter	6SA7	6SA7	8R	
5	AM IF Det.-FM IF Amp.	6SF7	6SF7	7AZ	
6	FM Det.-AVC	6H6	6H6	7Q	
7	Audio Amp. & Phase Inv.	6SL7GT	6SL7GT	8BD	
8	Power Output	6V6GT	6V6GT	7AC	
9	" "	6V6GT	6V6GT	7AC	
10	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11A	30	450	25214	FP429	DY-403	EL-424	AF444J4A	UP431450	▬ Filter
B	20	450							■ "
C	20	450							▲ "
D	20	25							Cathode Bypass
12	4	50	25316	TC40	M-4-150	TA-55	PRS150-4	BR550	Balancing Cap.
13	4	50	25316	TC40	M-4-150	TA-55	PRS150-4	BR550	" "
14	.005	600	25031	TP408	MP-6-005	TC-25	684-005	DT6D5	Line Filter
15	.003	600		TP406	S-6-003	TC-23	684-003	DT6D3	Output Plate Bypass
16	.003	600		TP406	S-6-003	TC-23	684-003	DT6D3	" "
17	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
18	.02	600	25195	TP412	S-6-02	TC-12	684-02	DT4S2	" "
19	.02	600	25195	TP412	S-6-02	TC-12	684-02	DT4S2	" "
20	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	" "
21	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	" "
22	.002	600	25185	TP405	S-6-002	TC-22	684-002	DT6D2	Tone Comp.
23	.1	200	25215	TP428	S-4-1	TC-1	484-.1	DT4P1	AVC Filter
24	.01	400	25194	TP421	S-4-01	TC-11	484-01	DT4S1	IF Plate Decoup.
25	.05	200	25196	TP426	S-4-05	TC-15	434-05	DT4S5	AVC Filter
26	.005	600	25183	TP408	S-6-005	TC-25	684-005	DT6D5	Conv. Screen Bypass
27	.05	200	25196	TP426	S-4-05	TC-15	434-05	DT4S5	AVC Filter
28	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Comp.
29	240	500	25187	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	" "
30	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
31	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
32	4	500	25327	MC205	MO.5-55	MS-55	1468-000005	5W5V5	IF Coupling Cer.
33	4000	300	25271	MC463	MW.5-24	1FM-24	1467-004	1D5D4	De-emphasis
34	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Ratio Det. Load
35	100	500	25188	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" "
36	4000	300	25271	MC463	MW.5-24	1FM-24	1467-004	1D5D4	IF Screen Bypass
37	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	IF Plate Decoup. Cer.
38	30		25332	MC220	MO.5-43	MS-43		5W5Q3	IF Plate Decoup. Cer.
39	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	IF Screen Decoup. Cer.
40	4000	300	25271	MC463	MW.5-24	1FM-24	1467-004	1D5D4	IF Screen Bypass
41	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	AVC Filter - Cer.
42	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	Conv. Plate Decoupling
43	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	Conv. Screen Byp. Cer.
44	47	500	25193	MC225	MW.5-45	1FM-45	1468-00005	5W5Q5	AM Osc. Grid
45	1350	300	25213						Osc. Feedback
46	215	500	25212						" "
47	30		25329	MC220	MO.5-43	MS-43		5W5Q3	FM Osc. Grid Cer.
48	30		25332	MC220	MO.5-43	MS-43		5W5Q3	FM RF Coupling Cer.
49	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	FM RF Plate Decoup. Cer.
50	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	FM RF Screen Byp. Cer.
51	1500		25273	MC456	MW.5-215	1FM-215	1467-0015	1W5D15	AVC Filter Cer.
52	60		25333						RF Coupling Cer.

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
53A	3 Meg.	½	78120	TM257			Volume Control tapped @ 1 Meg.
B	Shaft		Not Req.	SS25			Attach to 53A per instructions
C	Switch		" "	M26			" " " "
54A	3 Meg.	½	78072	UM165	D13-140	AM-67-Z	Tone Control
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 54A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIR CHIEF PART No.	IRC PART No.	IDENTIFICATION CODES
55	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. FM-RF Grid
56	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red FM-RF Plate Decoupling
57	15KΩ	½	77265	BTS-15K	Br.-Grn.-Or. FM-RF Screen Dropping
58	22KΩ	½	77266	BTS-22K	Red-Red-Or. FM Oscillator Grid
59	10KΩ	½	77212	BTS-10K	Br.-Blk.-Or. FM-RF Coil Shunt
60	10KΩ	2	77013	BT-2-10K	Br.-Blk.-Or. FM Converter Screen Dropping
61	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red FM Converter Plate Decoupling
62	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
63	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. " "
64	4.7 Meg.	½	77272	BTS-4.7 Meg.	Yl.-Vi.-Grn. " "
65	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. 1st IF Screen Dropping
66	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red 1st IF Screen Decoupling
67	4700Ω	½	77211	BTS-4700	Yl.-Vi.-Red 1st IF Plate Decoupling
68	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red " " " "
69	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. 2nd IF Screen
70	1000Ω	½	77262	BTS-1000	Br.-Blk.-Red 2nd IF Decoupling
71	220KΩ	½	77216	BTS-220K	Red-Red-Yl. AM Converter Grid
72	10KΩ	2	77013	BT-2-10K	Br.-Blk.-Or. AM Converter Screen Dropping
73	22KΩ	½	77266	BTS-22K	Red-Red-Or. AM Oscillator Grid
74	100KΩ	½	77214	BTS-100K	Br.-Blk.-Yl. AVC Network
75	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
76	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Diode Load
77	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Diode Filter
78	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Phono Shunt
79	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Series Phono
80	22KΩ	½	77266	BTS-22K	Red-Red-Or. Tone Compensation-See Note
81	220KΩ	½	77216	BTS- 220KΩ	Red-Red-Yl. Tone Compensation
82	22KΩ	½	77266	BTS-22K	Red-Red-Or. De-emphasis
83	47KΩ	½	77213	BTS-47K	Yl.-Vi.-Or. Tone Compensation
84	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. Ratio Detector Load
85	33KΩ	½	77267	BTS-33K	Or.-Or.-Or. Ratio Detector Load
86	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
87	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
88	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
89	470KΩ	½	77217	BTS-470K	Yl.-Vi.-Yl. Phase Inv. Plate Load
90	10 Meg.	½	77274	BTS-10 Meg.	Br.-Blk.-Blue Phase Inv. Grid
91	1 Meg.	½	77218	BTS-1 Meg.	Br.-Blk.-Grn. Tone Compensation
92	220KΩ	½	77216	BTS-220K	Red-Red-Yl. Output Grid
93	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
94	220KΩ	½	77216	BTS-220K	Red-Red-Yl. " "
95	270Ω	2	77189	BW-2-270	Red-Vi.-Br. Output Cathode
96	2700Ω	4.7	77243	AB-2500	Filter
97	1000Ω	2	77304	BT-2-1000	Br.-Blk.-Red "

Note-Not used in all models.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: AIR CHIEF PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
98	117V AC @ .61A	560V CT @ .078A	5.0V AC @ 2.0A	6.2V AC @ 3.6A	94204	P-6120*	T22R04	P-2952*

*Add series resistor to reduce plate voltage.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA AIR CHIEF PART No.	REPLACEMENT DATA STANCOR PART No.	REPLACEMENT DATA THORDAR'N PART No.	REPLACEMENT DATA MERIT PART No.	INSTALLATION NOTES
99A	12000Ω CT	3.9Ω	730Ω CT	.6Ω	94239	A-3870	T22856		
B					94195				Alternate transformer

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA AIR CHIEF PART No.	REPLACEMENT DATA JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-101†		†Replace output transformer to
100	PM	3.9Ω	81126	Mod. P12		match 6-8Ω voice coil
	CONE DIA.	VC DIA.				
101	11-7/8"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA AIR CHIEF PART No.	REPLACEMENT DATA MEISSNER PART No.	
102	Loop Ant.	60Ω	.7Ω	3883-5		
103	FM Ant.			11325		
104	Ant. Load. Coil			38845		
105	FM Ant.Coil	0Ω		38690		
106	FM RF Coil			36891		
107	BC Osc.Coil	1Ω	5.5Ω	38694	14-1040	
108	FM Osc.Coil			38692		
109	AM Input IF	10Ω	9Ω	38681	16-6658	
110	FM 1st IF	.5Ω	.5Ω	38683		
111	AM OutputIF	9Ω	9Ω	38682	16-6660	
112	FM 2nd IF	.5Ω	.5Ω	38684		
113	FM Ratio Det.	2Ω	0Ω‡	38685		‡Tertiary Winding
114	WaveTrap		INF.	38484		
115	RF Choke		.1Ω	38661		
116	" "		.1Ω	38661		
117	" "		.1Ω	38661		
118	" "		.1Ω	38661		
119	" "		.1Ω	38661		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA AIR CHIEF PART No.	REPLACEMENT DATA	INSTALLATION NOTES
120-121	Bayonet	6-8	0.15	Brown	42196		Type 47
122	"	"	0.25	Blue	41295		Type 44

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA AIR CHIEF PART No.	REPLACEMENT DATA ASTATIC PART No.	REMARKS
123	71231	L-71-A	

DATE 12/47

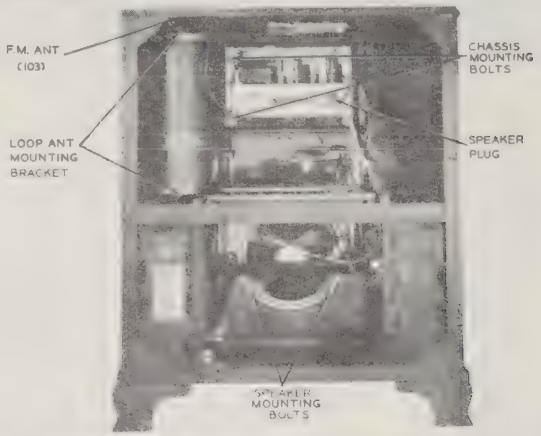
SET #30

FOLDER #4720-9

PARTS LIST AND DESCRIPTIONS (Continued)

MISCELLANEOUS

ITEM No.	PART NAME	AIR CHIEF PART No.	NOTES
124	Switch	30214	Band-Phono
125	"	30210	Record Comp. Socket & Switch
126	"	90115	Pushbutton Assy.
127	Tuning Cap.	26237	(13-465 MMF, 13-465 MMF) AM
A5	Trimmer	26240	BC Osc. Adj.
A7	Padder		" " Pad.
	Trimmer	26231	A14, A16, A18
	Trimmer Strip	26178	Pushbutton
	Coil Strip	38405	"
	Dial	31342	Glass
	Dial Pointer	11257	



DISASSEMBLY INSTRUCTIONS

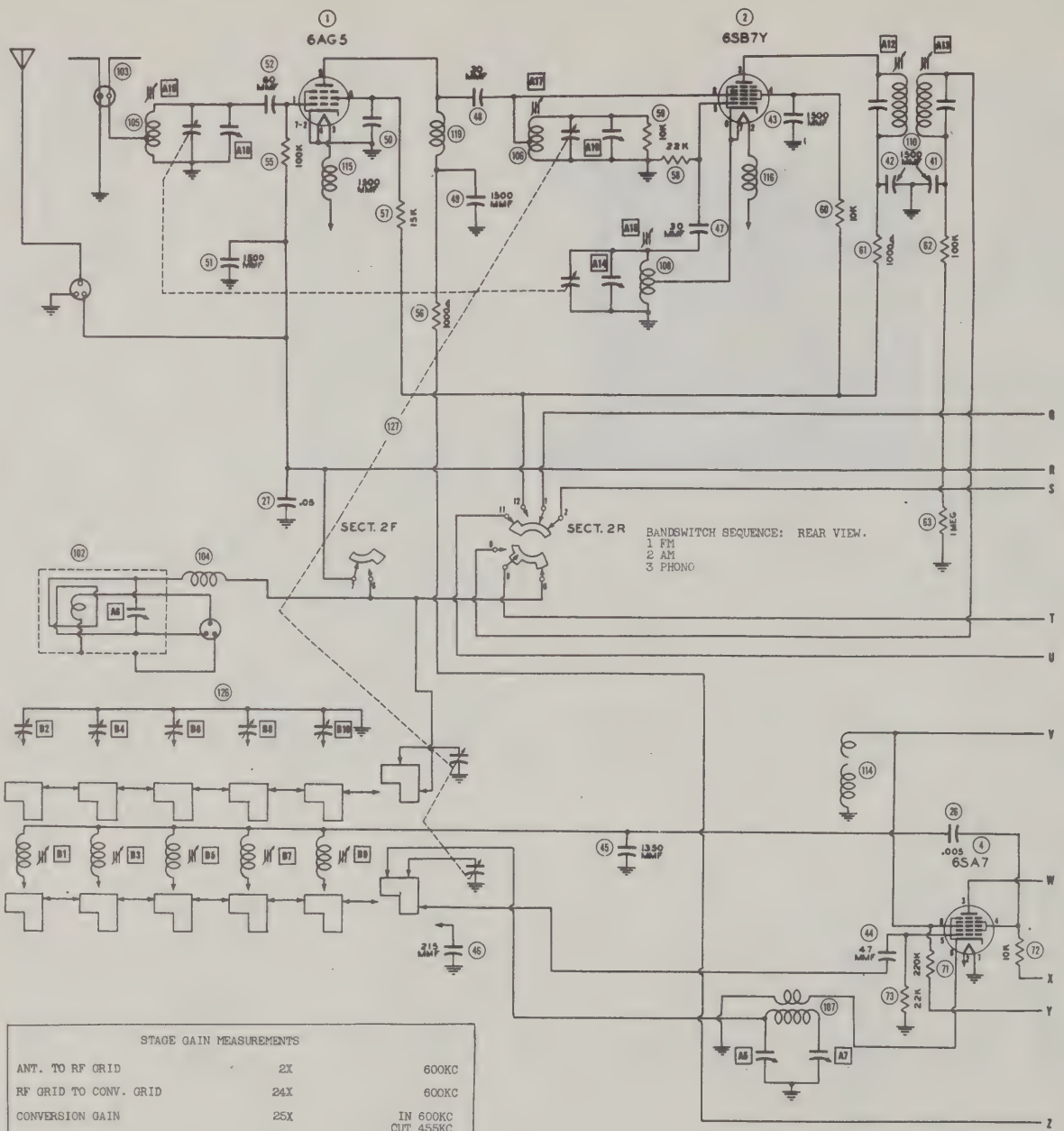
1. Remove four push-on type control knobs.
2. Remove fourteen wood screws holding panel on back of cabinet. Remove panel from cabinet.
3. Remove speaker plug from chassis.
4. Remove phono-pickup plug from chassis.
5. Remove phono-motor plug from under record changer.
6. Remove plugs from loop antenna.
7. Remove two Phillips head screws holding phono compartment light in cabinet.
8. Remove FM antenna plug from chassis.
9. Remove four screws holding chassis in cabinet. Remove chassis from cabinet.
10. Remove four Phillips head screws holding loop antenna in cabinet. Remove loop from cabinet.
11. Remove four hex nuts holding speaker in cabinet. Remove speaker from cabinet.

PUSHBUTTON ADJUSTMENTS

Range of buttons reading from left to right is 550-1250KC, 600-1350KC, 650-1450KC 650-1450KC, 750-1600KC.

Make up a list of stations desired to be set up ranging from low to high frequency stations, making certain that each station falls within range of each button.

1. Turn receiver on an allow it to warm up for about 15 minutes.
2. Remove escutcheon plate in front of adjustments.
3. Push in dial button and manually tune in first station on list.
4. Push in 1st button on left and adjust B1 to tune in station. Switch back and forth from dial button to the button being adjusted to insure the button being set on the correct station.
5. Adjust B2 for maximum volume.
6. Set up the remaining buttons in the same manner adjusting B3, B5, B7 and B9 to tune in stations and B4, B6, B8 and B10 for maximum volume.



STAGE GAIN MEASUREMENTS		
ANT. TO RF GRID	2X	600KC
RF GRID TO CONV. GRID	24X	600KC
CONVERSION GAIN	25X	IN 600KC CUT 455KC
1st IF TRANS.	1X	455KC
IF TUBE	200X	455KC
2nd IF TRANS.	1X	455KC
AUDIO	40X	400~
OUTPUT	20X	400~

IF=455KC AM

IF=10.7MC FM

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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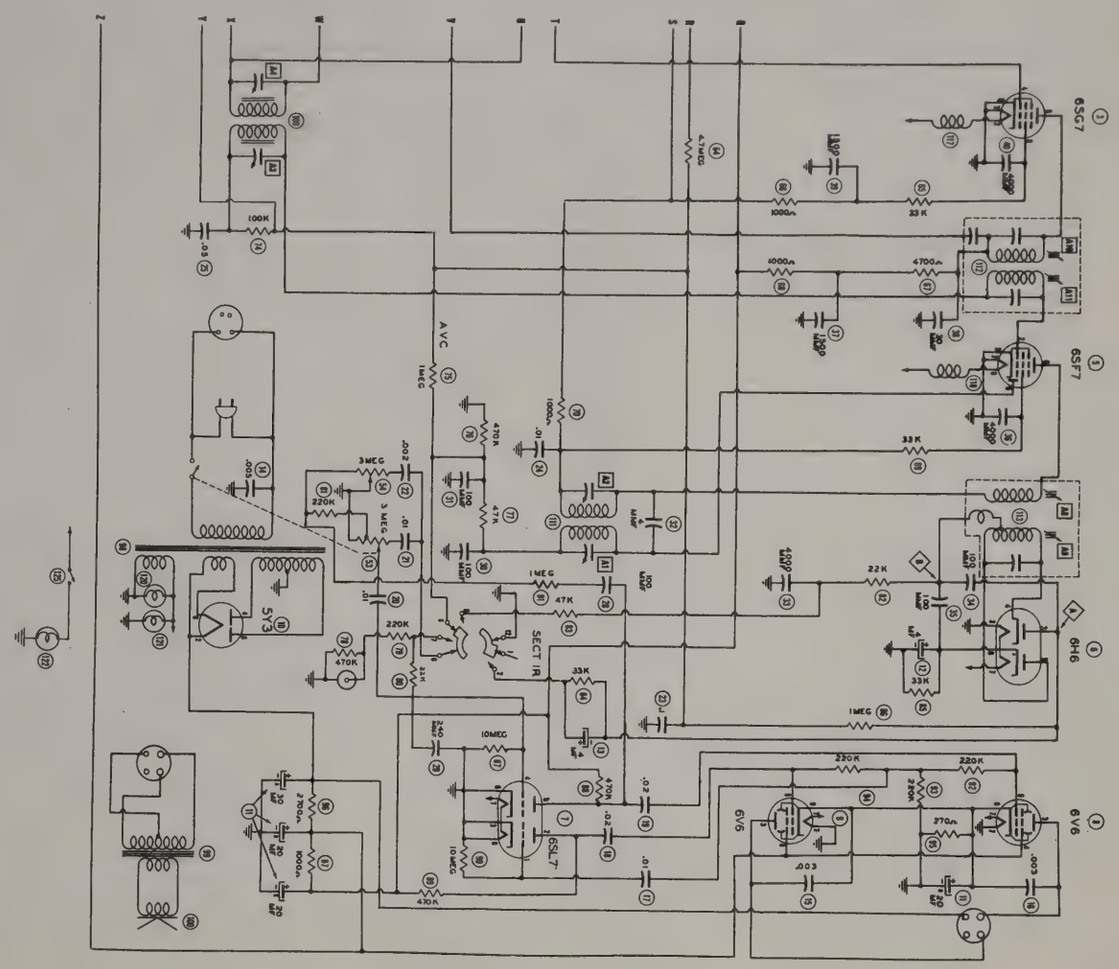
4720-9

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4720-9

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	-.6VDC	0V.	6.2VAC	0V.	166VDC	166VDC	0V.	-
‡	2	6SB7Y	0V.	6.2VAC	180VDC	87VDC	-5VDC§	0V.	0V.	0V.
	3	6SG7	0V.	6.2VAC	0V.	-.8VDC	0V.	95VDC	0V.	138VDC
	4	6SA7	0V.	0V.	182VDC	88VDC	-9VDC§	0V.	6.2VAC	-.3VDC
	5	6SF7	0V.	-.6VDC	0V.	77VDC	-.7VDC	167VDC	0V.	6.2VDC
‡	6	6H6	0V.	0V.	-.6VDC	0V.	.1VDC	.1VDC	6.2VAC	.6VDC
	7	6SL7GT	-.9VDC	57VDC	0V.	-.9VDC	50VDC	0V.	6.2VAC	0V.
	8	6V6GT	0V.	0V.	300VDC	210VDC	0V.	0V.	6.2VAC	13VDC
	9	6V6GT	0V.	0V.	300VDC	210VDC	0V.	0V.	6.2VAC	13VDC
	10	5Y3GT	0V.	305VDC	0V.	280VAC	0V.	280VAC	0V.	305VDC

RESISTANCE READINGS

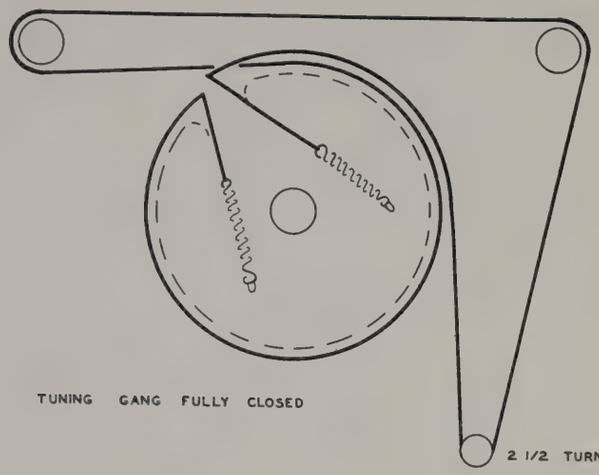
	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	6AG5	1.3 Meg.	0Ω	.2Ω	0Ω	100KΩ	115KΩ	0Ω	-
‡	2	6SB7Y	0Ω	.2Ω	100KΩ	110KΩ	22KΩ	0Ω	0Ω	0Ω
	3	6SG7	0Ω	.2Ω	0Ω	1.2 Meg.	0Ω	135KΩ	0Ω	105KΩ
	4	6SA7	0Ω	0Ω	100KΩ	110KΩ	22KΩ	.5Ω	.1Ω	1.8 Meg
	5	6SF7	0Ω	1.7 Meg.	0Ω	135KΩ	550KΩ	105KΩ	0Ω	.2Ω
‡	6	6H6	0Ω	0Ω	30KΩ	INF.	INF.	INF.	.1Ω	30KΩ
	7	6SL7GT	10 Meg.	570KΩ	0Ω	10 Meg.	570KΩ	0Ω	.1Ω	0Ω
	8	6V6GT	0Ω	0Ω	100KΩ	100KΩ	460KΩ	240KΩ	.1Ω	270Ω
	9	6V6GT	0Ω	0Ω	100KΩ	100KΩ	420KΩ	240KΩ	.1Ω	270Ω
	10	5Y3GT	INF.	100KΩ	INF.	110Ω	INF.	120Ω	INF.	100KΩ

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



DIAL CORD DRIVE

A

C

B

D

FIRESTONE (AIR CHIEF) MODEL 4-A-42 (Code 117-7-4A42) PAGE 9

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use 60~ synchronized sweep voltage from signal generator for horizontal deflection. The lead carrying this voltage should be shielded and of low total capacity.
The scope patterns to be strived for in alignment were obtained under ideal conditions. They should be duplicated as nearly as possible.

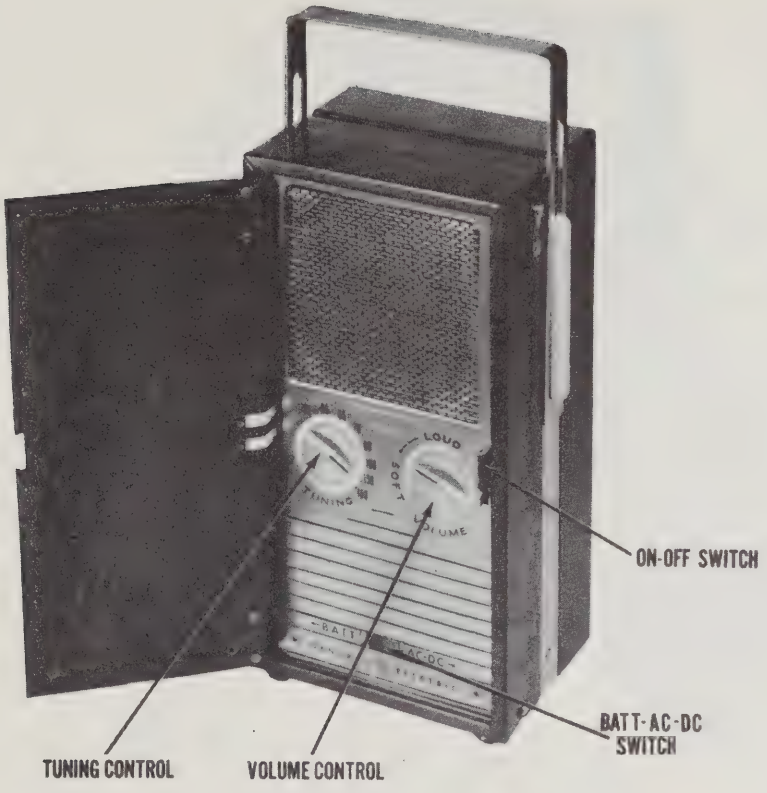
	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5	3300MMF	High side to Pin 2 (grid) of 6SF7. Low side to chassis.	10.7MC (freq. modulated 300KC sweep 60 modulation)	FM (fully counter-clockwise	Tuning cap. fully open.	Connect vertical amplifier to Point A. Ground to chassis	A8	Disconnect 4 MFD. capacitor from Point A. Remove 6SL7 Tube from socket. Set volume and tone control completely clockwise. Preset A9 by turning it out as far as possible. Adjust A8 for pattern of Figure A.
6	3300MMF	"	"	"	"	"	A9	Adjust for pattern of Figure B making certain that both sides of the curve are symmetrical.
7	3300MMF	High side to Pin 4 (grid) 6SQ7. Low side to chassis.	"	"	"	"	A10,A11	Adjust for maximum amplitude and symmetry as in Figure A.
8	3300MMF	High side to Pin 8 (grid) 6SB7Y. Low side to chassis.	"	"	"	"	A12,A13	Adjust A12 for maximum amplitude and symmetry as in Figure A. Adjust A13 for pattern of Fig. C making both sides as symmetrical as possible.
9	3300MMF	"	"	"	"	Vertical amplifier to Point B. Low side to chassis.	A8,A9	Reconnect 4 MFD. capacitor to Point A. Pattern should be that of Figure D. If it is not, adjust A8 and A9 for maximum amplitude and straightness of pattern from "1" to "2" with a horizontal line from "3" to "4" crossing center of diagonal line. Replace 6SL7 tube in socket.
						OUTPUT METER		
10	300Ω carbon res.	High side to ungrounded terminal of FM ant. socket. Low side to chassis.	107.9 MC (freq. modulated 300KΩ sweep 400 modulation)	FM (fully counter-clockwise	Channel 300	Across voice coil	A14	Adjust for maximum output
11	"	"	87.9MC (freq.mod.)	"	Channel 200	"	A15	Adjust for maximum output. Repeat Steps 10 and 11 until no further improvement can be made.
12	"	"	105MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 285)	"	A16	Adjust for maximum output.
13	"	"	92MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 220)	"	A17	Adjust for maximum output. Repeat Steps 12 & 13 until no further improvement can be made.
14	"	"	105MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 285)	"	A18	Adjust for maximum output.
15	"	"	92MC (freq.mod.)	"	Tune for maximum output. (Approx. Channel 220)	"	A19	Adjust for maximum output. Repeat Steps 14 and 15 until no further improvement can be made.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5	.05 MFD	High side to Pin 4 (grid 6SQ7. Low side to chassis.	10.7MC (unmodulated)	FM	Tuning cap. fully open.	DC probe of VTVM to Point B. Common lead to chassis.	A8,A9	Preset A9 by turning it out as far as possible. Adjust A8 for maximum deflection (negative). Then adjust A9 for zero deflection. (as A9 is adjusted voltage will go up slowly then decrease rapidly. Adjust until voltage decreases to zero)
6	.05 MFD	"	"	"	"	DC probe of VTVM to point A. Common lead to chassis.	A10, A11	Preset A11 by turning it out as far as possible. Adjust A10 for maximum deflection. Then adjust A11 for maximum deflection.
7	.05 MFD	High side to Pin 8 (grid) of 6SB7Y. Low side to chassis.	"	"	"	"	A12, A13.	Preset A13 by turning it out as far as possible. Adjust A12 for maximum deflection. Then adjust A13 for maximum deflection.
8	300Ω carbon res.	High side to ungrounded terminal of FM ant. socket Low side to chassis.	87.5MC	"	Tuning cap. fully closed	"	A15	Adjust for maximum deflection.
9	"	"	108.5MC	"	Tuning cap. fully open.	"	A14	Adjust for maximum deflection. Repeat Steps 8 and 9 until no further improvement can be made.
10	"	"	92MC	"	Tune for maximum reading.	"	A17,A19	Adjust for maximum deflection.
11	"	"	105MC	"	Tune for maximum reading.	"	A16,A18	Adjust for maximum deflection. Repeat Steps 10 and 11 until no further improvement can be made.

FOR AM ALIGNMENT SEE FRONT PAGE OF THIS FOLDER.

GENERAL ELECTRIC
MODEL 140 BATTERY-LINE OPERATED



GENERAL ELECTRIC
MODEL 140 BATTERY-LINE OPERATED

GENERAL ELECTRIC MODEL 140

TRADE NAME	General Electric, Model 140
MANUFACTURER	General Electric Co., Appl. and Merch. Dept., Bridgeport, Conn.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	1R5 Converter, 1U4 IF Amp., 1S5 Det.-AVC-AF, 3S4 Power Output.
POWER SUPPLY	105-125 Volts AC-DC or 1.5 Volts "A" Supply and 67.5 Volts "B" Supply
RATING	.14 Amp. @ 117 Volts AC or 250MA @ 1.5 Volts DC and 8MA @ 67.5 Volts DC
TUNING RANGE—BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Due to the compactness of this receiver it will be necessary to use an insulated screwdriver blade with some form of flexible coupling when adjusting A1 & A3.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to Pin 6 (grid) 1U4. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	.05 MFD	High side to rear stator of tuning cap. Low side to chassis.	"	"	"	A3,A4.	Adjust for maximum output. Repeat Steps 1 & 2.
3		Loop	1620KC	Tuning cap. fully open.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	1500KC	Tune for maximum output.	"	A6	Adjust for maximum output.
5		"	580KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

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DATE 12/47 SET #30 FOLDER #4720-10

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1U4	1U4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3S4	3S4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GEN. ELECT. PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	RCE-051	TCD48	M-2x40-150	UT-401	FRSA150-40-	BRD3315	Filter
B	40	150				UT-401	40	"	"
6	90	10	RCE-052	TC2501	M-100-12	UHC-112	PRS25-100	BRH121	Filament Bypass
7	.05	400	UCC-028	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.005	400	RCC-076					ZS4D5	Output Plate Bypass
9	.01	400	RCC-075					ZS4S1	Audio Coupling
10	.1	400	RCC-077						AF Plate Decoup.
11	.1	400	RCC-077						AF Screen Bypass
12	.005	400	RCC-076					ZS4D5	Audio Coupling
13	.05	400	RCC-078						AVC Filter
14	.1	400	RCC-077						Fil. Bypass
15	.1	600	UCC-048	TP418	S-6-1	TC-1	684-.1	DT6P1	Line Isolation
16	.01	400	RCC-075					ZS4S1	Osc. Anode Decoup.
17	.1	400	RCC-077						Fil. Bypass
18	220		UCU-536						AF Plate Bypass
19	330		UCU-540						Diode RF Filter
20	100		UCU-528						Osc. Grid
21	10		RCW-020	MCB215	MOS.5-41	MS-41	1469-00001	5W5Q1	Fixed Trimmer
53	430		UCG-543						Fixed Padder-Silver

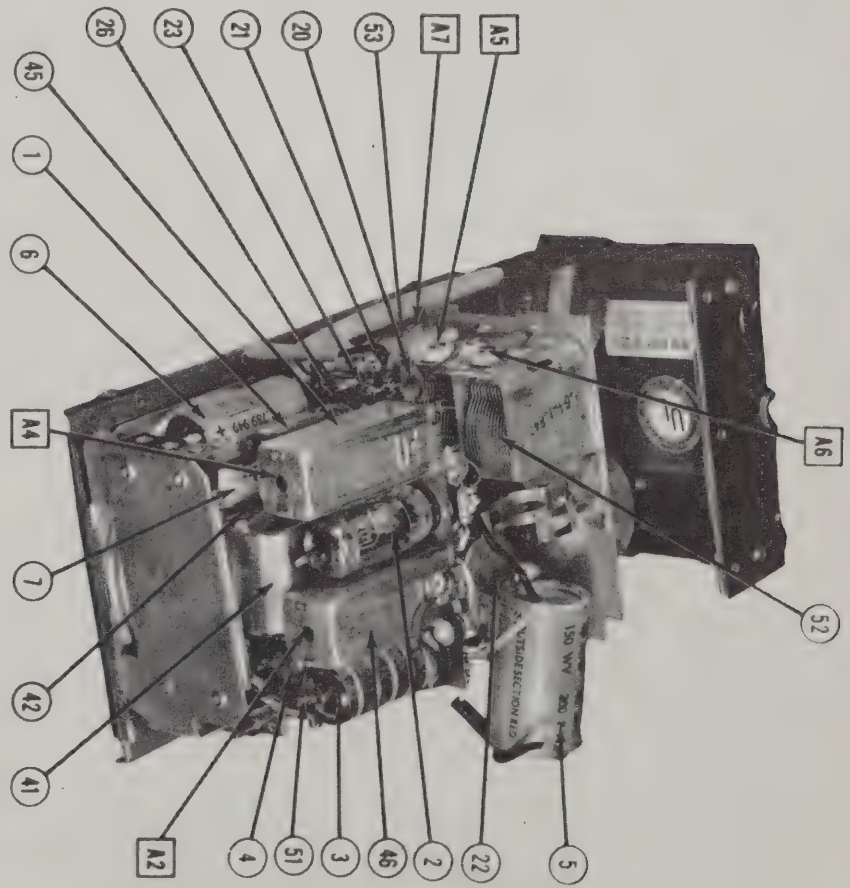
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22	500KΩ	½	RRC-055				Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	IRC PART No.	IDENTIFICATION CODES
23	100KΩ	½	RRH-097	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
24	1000Ω	½	RRH-1049	BTS-1000	Br.-Blk.-Red Filament String
25	2.2 Meg.	½	RRH-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	2.2 Meg.	½	RRH-129	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	910Ω	½	RRH-1048	BTS-1000	White-Br.-Br. Filament String
28	3300Ω	½	RRH-061	BTS-3300	Or.-Or.-Red Decoupling
29	33Ω	3	RRM-001		Or.-Or.-blk. Rectifier Ballast
30	1200Ω		RRW-019	AB-1250	Filter
31	10 Meg.	½	RRH-145	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
32	3.9 Meg.	½	RRH-135	BTS-3.9 Meg.	Or.-White-Grn. AF Screen Dropping
33	1 Meg.	½	RRH-121	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
34	68KΩ	½	RRH-093	BTS-68K	Blue-Gray-Or. AF Plate Decoupling
35	3.3 Meg.	½	RRH-133	BTS-3.3 Meg.	Or.-Or.-Grn. Output Grid
36	750Ω	½	RRH-1046		Vi.-Grn.-Br. Bias
37	22KΩ	½	RRH-081	BTS-22K	Red-Red-Or. "
38	68Ω	½	URD-1146	BW-½-68	Blue-Gray-Blk. Filament String
39	1320Ω		RRW-020	AB-1250	Filament Dropping

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GEN. ELECT. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
40	11000Ω	3.4Ω	720Ω	.3Ω	RTO-034				

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			GEN. ELECT. PART No.	JENSEN PART No.		
	FIELD	VC IMP.				
41	PM	3.4Ω	RDP-012			
	CONE DIA.	VC DIA.				
42	3-3/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		INSTALLATION NOTES
		PRI.	SEC.	GEN. ELECT. PART No.	MEISSNER PART No.	
43	Loop Ant.		3Ω	RAX-016		Door Assembly with Loop.
44	Osc. Coil		8Ω	RLC-054		
45	Input IF	19Ω	19Ω	RTL-052		
46	Output IF	19Ω	19Ω	RTL-052		

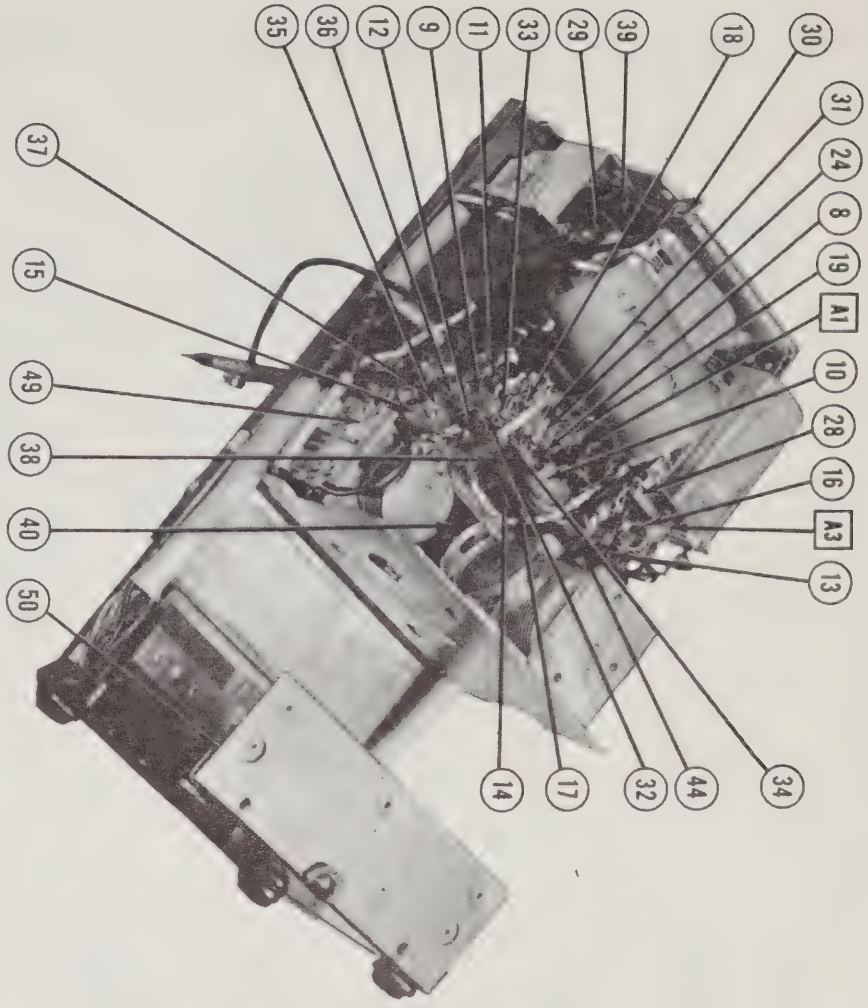
BATTERIES

ITEM No.	VOLTAGE	GENERAL ELECTRIC PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
47	1.5V "A"		#950			2 Used in Parallel
48	67.5V "B"			#467		

MISCELLANEOUS

ITEM No.	PART NAME	GEN. ELECT. PART No.	NOTES
49	On-Off Switch	RSW-035	
50	Switch	RSW-034	AC-DC-Batt.
51	Rectifier	REX-004	Selenium
52	2 Gang Var. Cap	RCT-023	(14-365 MMF, 14-365 MMF)
A7	Padder	RCY-030	Osc. Adj.

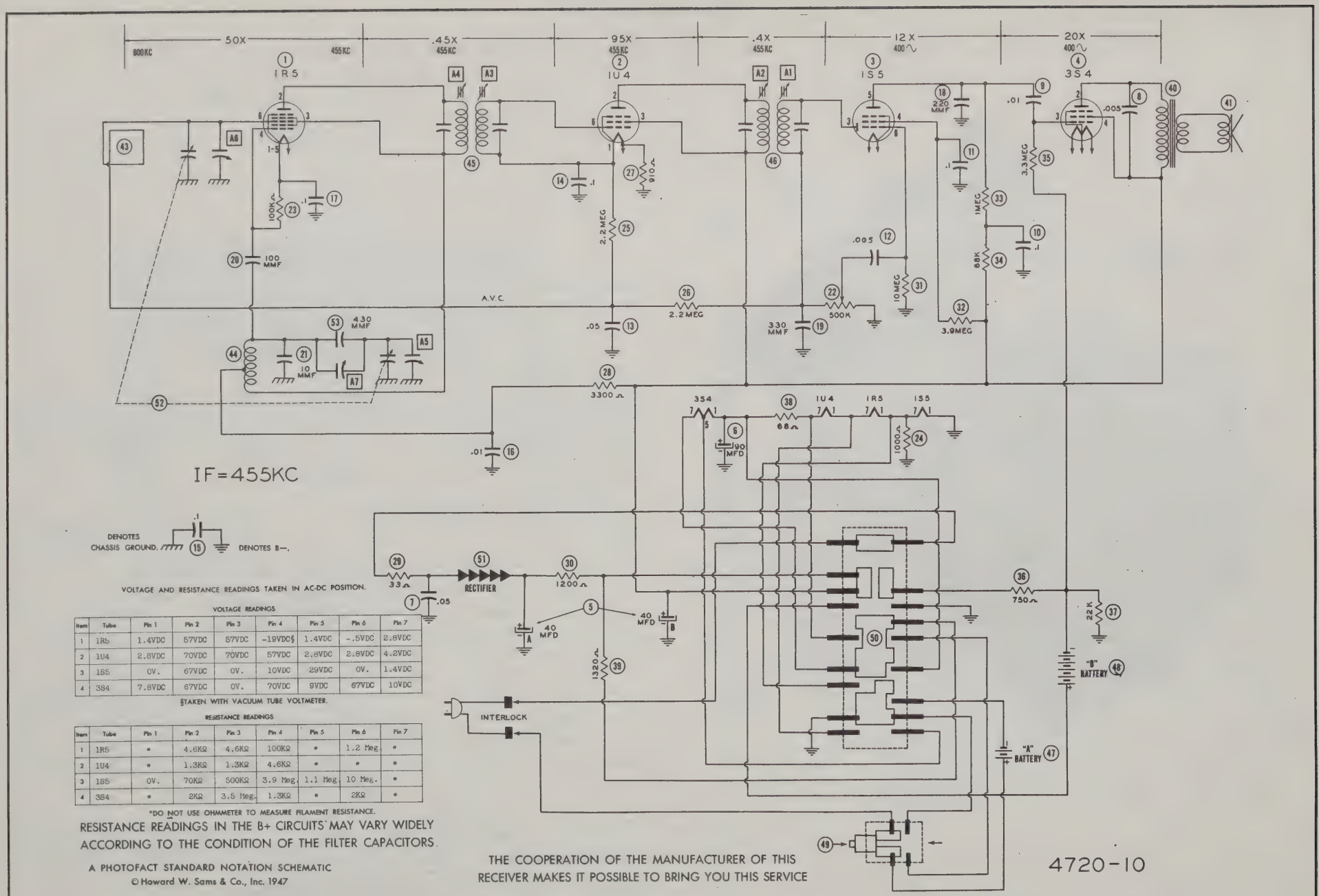
CHASSIS—BOTTOM VIEW



DATE 12/47 SET #30 FOLDER #4720-10

GENERAL ELECTRIC MODEL 140
BATTERY-LINE OPERATED

GENERAL ELECTRIC MODEL 140
BATTERY-LINE OPERATED



VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.4VDC	57VDC	57VDC	-19VDC§	1.4VDC	-.5VDC	2.8VDC
2	1U4	2.8VDC	70VDC	70VDC	57VDC	2.8VDC	2.8VDC	4.2VDC
3	1S5	0V.	67VDC	0V.	10VDC	29VDC	0V.	1.4VDC
4	3S4	7.6VDC	67VDC	0V.	70VDC	9VDC	67VDC	10VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	4.6KΩ	4.6KΩ	100KΩ	*	1.2 Meg.	*
2	1U4	*	1.3KΩ	1.3KΩ	4.6KΩ	*	*	*
3	1S5	0V.	70KΩ	500KΩ	3.9 Meg.	1.1 Meg.	10 Meg.	*
4	3S4	*	2KΩ	3.5 Meg.	1.3KΩ	*	2KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS.

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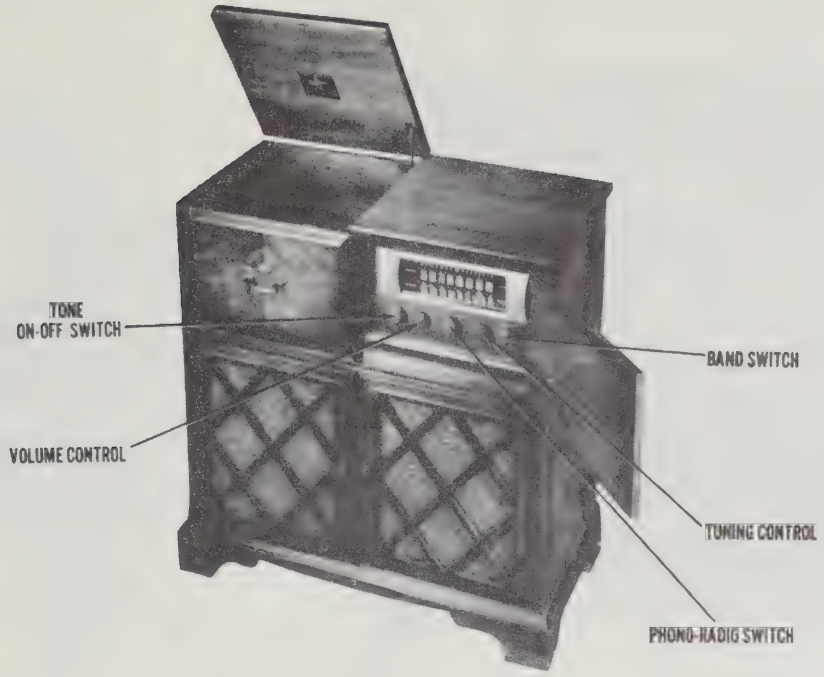
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4720-10

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting volume control to B-.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

GENERAL ELECTRIC
MODELS 326, 327



GENERAL ELECTRIC
MODELS 326, 327

TRADE NAME	General Electric Models 326 & 327
MANUFACTURER	General Electric Co., Appl. & Merch. Dept., Bridgeport, Conn.
TYPE SET	AC Operated Radio-Phono Combination Superheterodyne Receiver with Loop Antenna
TUBES (SEVEN)	Types, 6SG7 RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-Audio Amp., 6SC7 Phono Pre. Amp., 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-125 Volts AC
RATING	.520 Amps. @ 117V AC
TUNING RANGE—BROADCAST	540-1600KC
SHORT WAVE	5.5 - 18MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Make all RF adjustments with receiver completely assembled in cabinet. After receiver is installed in the cabinet, turn tuning capacitor fully closed and set pointer to last reference mark at low frequency end of dial before performing Step 3.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to Pin 4 (grid) 6SK7. Low side to chassis.	455KC	BC (counter-clock-wise)	Tuning cap. fully closed.	Across voice coil	A1,A2	Adjust for maximum output.
2	.05 MFD.	High side to Pin 8 (grid) 6SA7. Low side to chassis.	"	"	"	"	A3,A4	Adjust for maximum output. Install receiver in cabinet. Connect loop antennas.
3		Loop	1500KC	"	Tune for maximum output.	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Rock tuning cap. and adjust for maximum output.
4		"	580KC	"	"	"	A6	Rock tuning cap. and adjust for maximum output. Repeat Steps 3 & 4 until no further improvement can be made.
5		"	18MC	SW (clock-wise)	18MC	"	A7	Adjust for maximum output. Tune sig. gen. to 18.9MC. If signal is not heard retune sig. gen. to 18MC and loosen trimmer to next peak. Adjust for maximum output and re-check for image.
6		"	"	"	Tune for maximum output.	"	A8	Rock tuning control and adjust for maximum output.

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DATE 12/47 SET #30 FOLDER #4720-11

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: GEN. ELECT. PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6SG7	6SG7	8BK	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	9N	
4	Det.-Audio Amp.	6SQ7	6SQ7	8Q	
5	Phono Pre. Amp.	6SC7	6SC7	8S	
6	Power Output	6V6GT	6V6GT	7AC	
7	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: GENERAL ELECTRIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
8A	30	350		FP429	DY-403	EL-424	AF444J4A	UP43145C	◓ Filter - See Note 1
B	30	350							■ "
C	15	250							▲ "
D	20	25							Cathode Bypass
9A	15	250	RCE-002	FP225	DY-2x15-350	EL-253	AF44F	UP15D35	■ Filter
B	15	250							▲ "
10	.05	600	UCC-045	TP415	S-6-05	TC-15	684-05	DT6S5	Audio Coupling
11	.02	600	UCC-041	TP412	S-6-02	TC-12	684-02	DT6S2	" "
12	.05	600	UCC-045	TP415	S-6-05	TC-15	684-05	DT6S5	" "
13	.01	600	UCC-040	TP410	S-6-01	TC-11	684-01	DT6S1	Tone Comp.
14	.003	600	UCC-037	TP406	S-6-003	TC-23	684-003	DT6D3	" "
15	.02	600	UCC-041	TP412	S-6-02	TC-12	684-02	DT6S1	Audio Coupling
16	.01	600	UCC-040	TP410	S-6-01	TC-11	684-01	DT6S1	" "
17	.007	600	RCC-001	TP445	S-6-006	TC-26	684-006	DT6D6	Tone Comp.
18	.001	600	RCC-035	TP404	S-6-001	TC-21	684-001	DT6D1	" "
19	.001	600	RCC-035	TP404	S-6-001	TC-21	684-001	DT6D1	" "
20	.005	600	UCC-039	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
21	.01	600	UCC-040	TP410	S-6-01	TC-11	684-01	DT6S1	IF Plate Decoup.
22	.01	600	UCC-040	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Screen Bypass
23	.01	600	UCC-040	TP410	S-6-01	TC-11	684-01	DT6S1	RF Screen Bypass
24	.01	600	UCC-040	TP410	S-6-01	TC-11	684-01	DT6S1	RF Cathode Bypass
25	.05	600	UCC-045	TP415	S-6-05	TC-15	684-05	DT6S5	AVC Filter
26	470	500	RCU-064	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
27	100	500	RCU-112	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Tone Comp.
28	3900	300	RCU-189						Fixed Pad.
29	47	500	RCU-110	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
30	100	500	RCU-112	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

Note 1 - Some sets may use Part Number RCE-003.

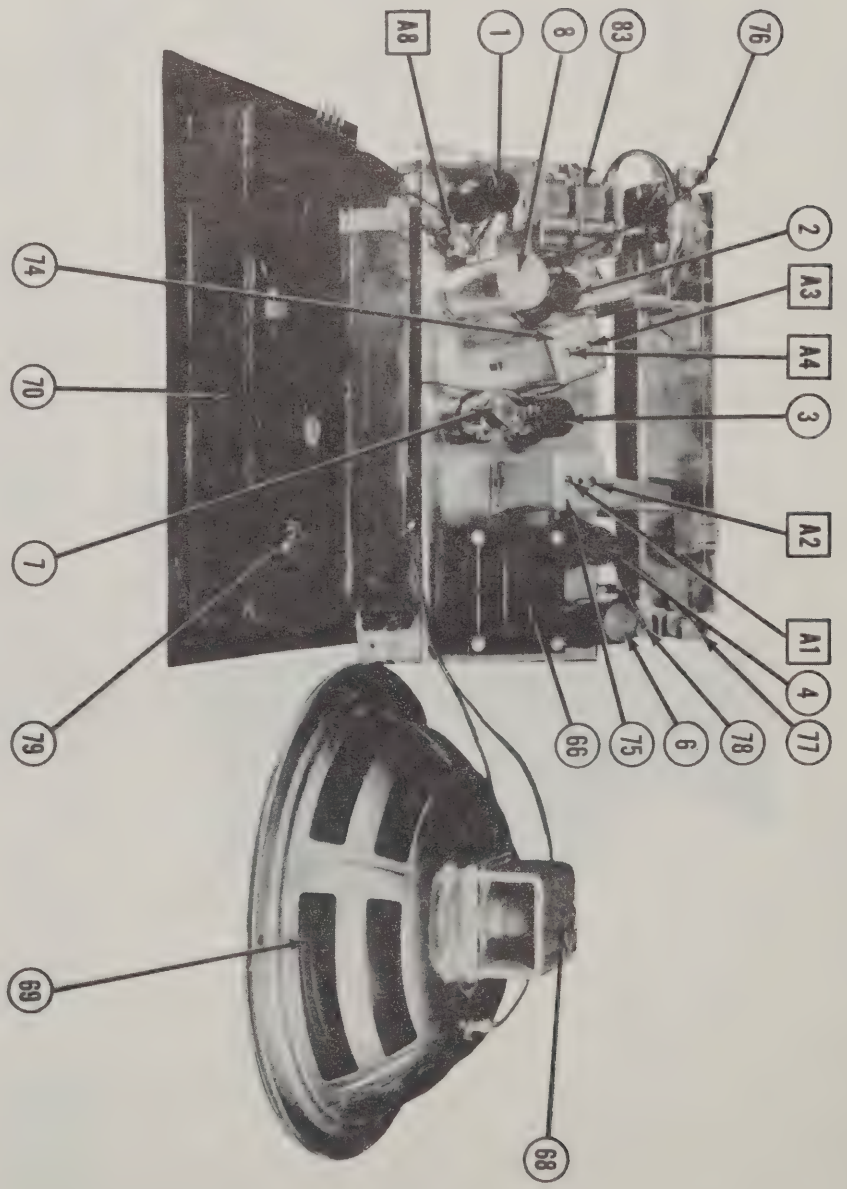
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31A	2 Meg.	½	RRC-005	TM251	D18-139X	AT-116	Volume Control tapped @ 1 Meg.
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 31A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: GEN. ELECT. PART No.	IRC PART No.	IDENTIFICATION CODES
32	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br. Antenna Loading
33	270Ω	½	URD-035	BW-½-270	Red-Vi.-Br. RF Cathode
34	47KΩ	½	URD-089	BTS-47K	Yl.-Vi.-Or. RF Screen Dropping
35	4700Ω	½	URD-065	BTS-4700	Yl.-Vi.-Red RF Plate Load
36	47KΩ	½	URD-089	BTS-47K	Yl.-Vi.-Or. Converter Grid
37	22KΩ	½	URD-081	BTS-22K	Red-Red-Or. Oscillator Grid
38	470Ω	½	URD-041	BTS-470	Yl.-Vi.-Br. Converter Screen Decoupling
39	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. 1st IF Transformer Shunt
40	150Ω	½	URD-029	BW-½-150	Br.-Grn.-Br. IF Cathode
41	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red IF Plate Decoupling
42	10KΩ	2	URF-073	BT-2-10K	Br.-Blk.-Or. Screen Dropping
43	2.2 Meg.	½	URD-129	BTS-2.2 Meg	Red-Red-Grn. AVC Network
44	220KΩ	½	URD-105	BTS-220K	Red-Red-Yl. Diode Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	GENERAL ELECTRIC PART No.	IRC PART No.	
45	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. Tone Compensation
46	100KΩ	½	URD-097	BTS-100K	Br.-Blk.-Yl. " "
47	100Ω	½	URD-025	BW-½-100	Br.-Blk.-Br. Feedback
48	10 Meg.	½	URD-145	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
49	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
50	470KΩ	½	URD-113	BTS-470K	Yl.-Vi.-Yl. AF Output Grid
51	1000Ω	½	URD-049	BTS-1000	Br.-Blk.-Red Tone Compensation
52	330Ω	½	URD-037	BW-½-330	Or.-Or.-Br. Output Cathode
53	5600Ω	½	URD-067	BTS-5600	Grn.-Blue-Red Tone Compensation
54	1500Ω	½	URD-053	BTS-1500	Br.-Grn.-Red Feedback
55	6800Ω	½	URD-077	BTS-6800	Blue-Gray-Red Phono Shunt
56	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. 1st Phono Amp. Grid
57	3.3 Meg.	½	URD-133	BTS-3.3 Meg.	Or.-Or.-Grn. 2nd Phono Amp. Grid
58	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or. 1st Phono Amp. Plate Load
59	68KΩ	½	URD-093	BTS-68K	Blue-Gray-Or. 1st Phono Amp. Plate Decoupling
60	33KΩ	½	URD-085	BTS-33K	Or.-Or.-Or. 2nd Phono Amp. Plate Load
61	33KΩ	½	URD-085	BTS-33K	Or.-Or.-Or. 2nd Phono Amp. Plate Decoupling
62	200KΩ	½	RRD-104	BTS-220K	Red-Blk.-Yl. Audio Coupling
63	27KΩ	½	URD-083	BTS-27K	Red-Vi.-Or. Tone Compensation
64	180KΩ	½		BTS-180K	Br.-Gray-Yl. " "
65	1800Ω	2	URF-055	BT-2-1800	Br.-Gray-Red Filter

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	GENERAL ELECTRIC PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
66	117V AC @ .52A	520V CT @ .066A	4.9V AC @ 2.0A	6.3V AC @ 2.9A SEC. 4 6.4V CT @ .3A	RTP-010			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		GENERAL ELECTRIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
67	4750Ω	4.3Ω	385Ω	.63Ω	RTO-004	A-3877	T22846	A-2930	

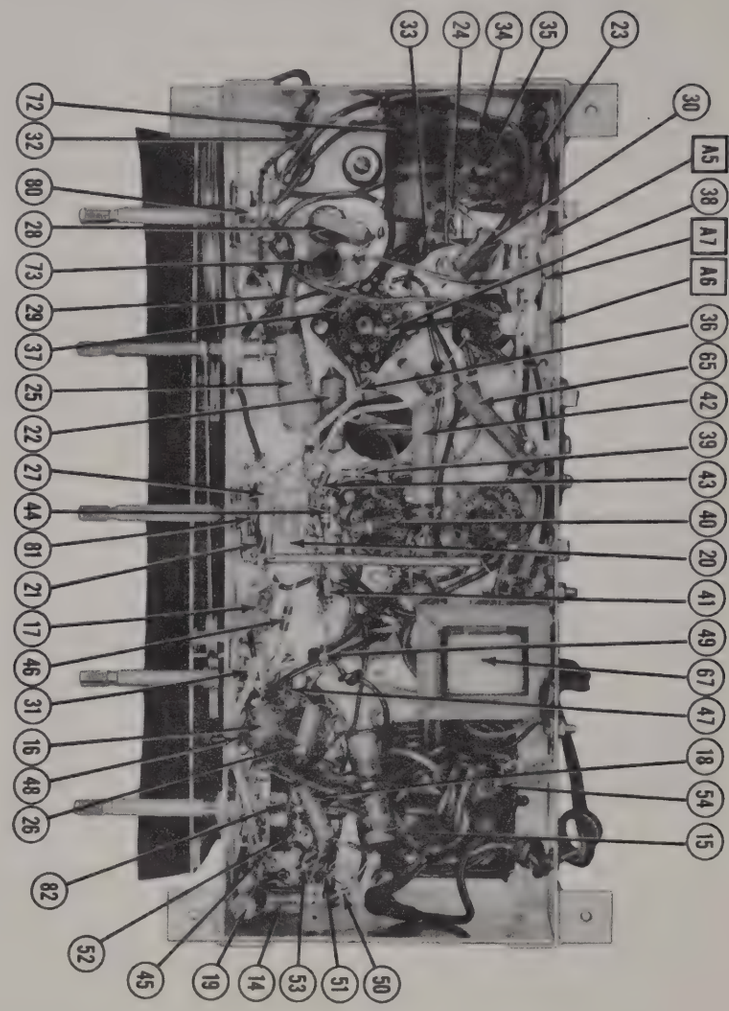
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	GEN. ELCT. PART No.	JENSEN PART No.		
68	PM	4.3Ω	UOP-1205	ST-102† Mod. P12-S		†Replace outputtransformer to match 6-8Ω voice coil
	CONE DIA.	VC DIA.				
69	12"	1"	UOX-005			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	GEN. ELECT. PART No.	MEISSNER PART No.	
70	Loop Ant.	.12	1.5Ω	RLL-006		
71	SW Loop Ant		0Ω	RLL-005		
72	BC Osc.Coil		4.3Ω	RLC-004	14-1040	
73	SW Osc. Coil		.1Ω	RLC-005	14-1046	
74	Input IF	16Ω	17Ω	RTL-005	16-6658	
75	Output IF	17Ω		RTL-006	16-6670	

CHASSIS—BOTTOM VIEW



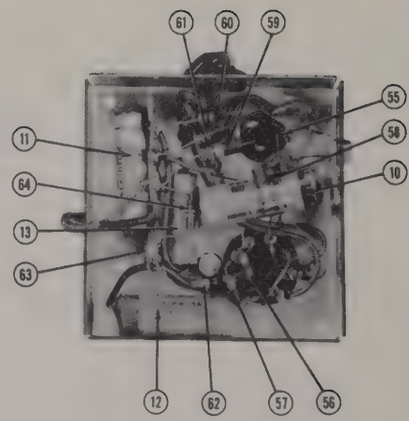
PARTS LIST AND DESCRIPTIONS (Continued)

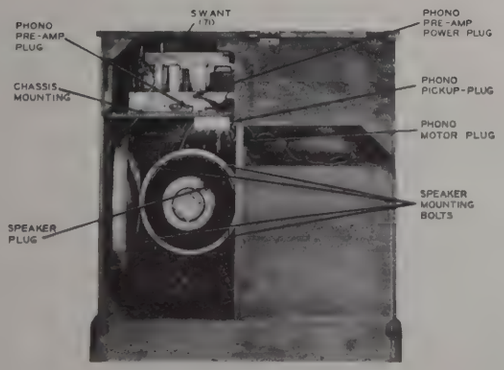
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					GEN. ELECT. PART No.		
76-79	Bayonet	6-8	0.25	Blue	UD1-005		Type 44

MISCELLANEOUS

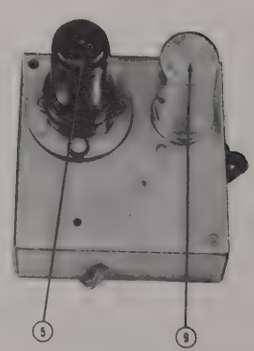
ITEM No.	PART NAME	GEN. ELECT. PART No.	NOTES
80	Band Switch	RSW-007	
81	Switch	RSW-006	Radio-Phono
82	"	RSX-003	Tone-Power
83	2 Gang Var.Cap.	RCT-005	(13-512MMF, 13-512MMF)
	Pointer	RDP-005	Dial
	Dial Scale	RDS-016	

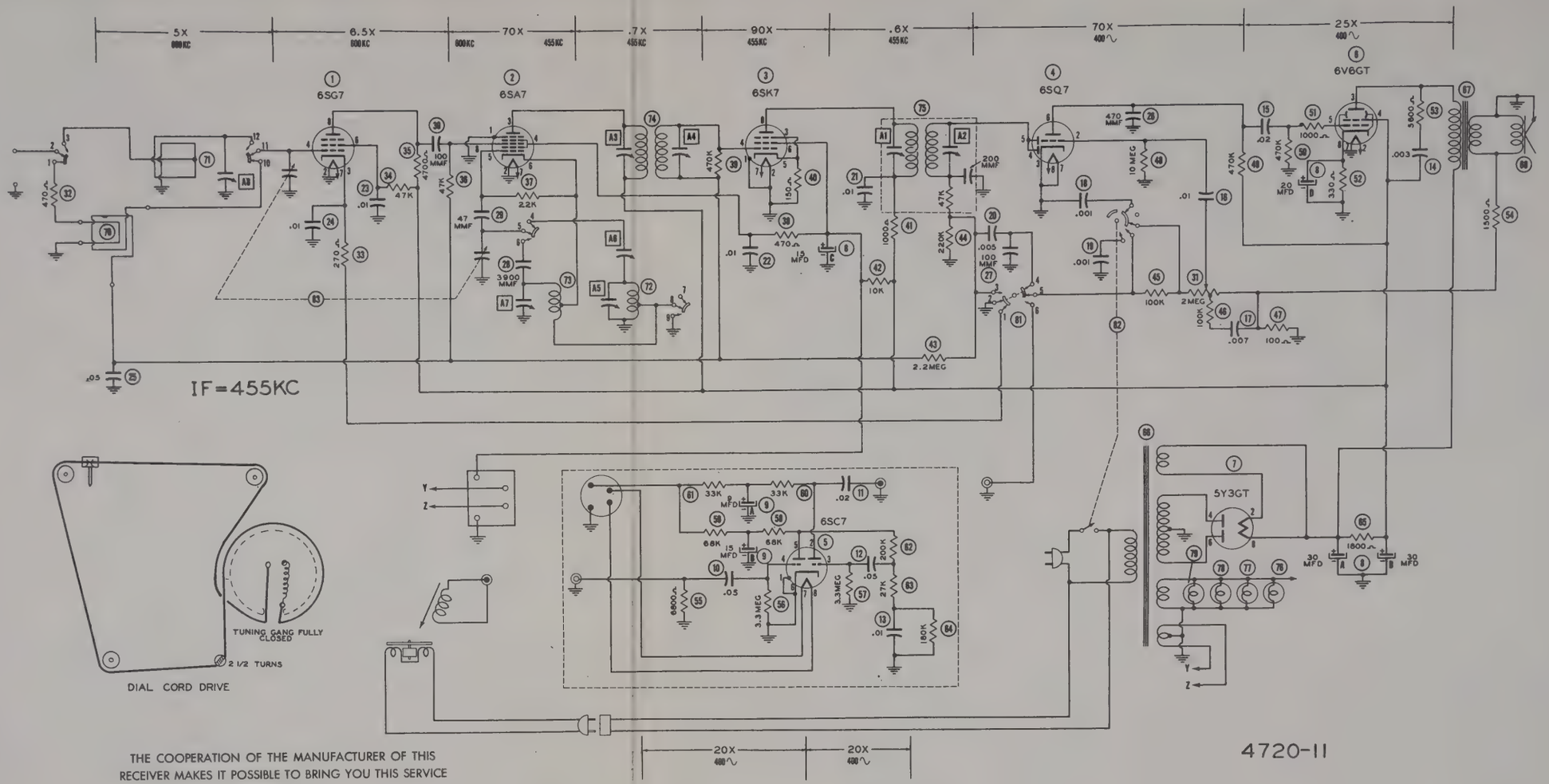




DISASSEMBLY INSTRUCTIONS

1. Remove five push-on type control knobs.
2. Remove power plug from phono pre-amp. chassis to tuning chassis.
3. Remove phono pickup plug from pre-amp. chassis.
4. Remove speaker plug from speaker.
5. Disconnect phono-motor plug.
6. Remove pre-amp. coupling plug from tuning chassis.
7. Remove three plugs from short wave antenna.
8. Remove pilot light from bracket on cabinet.
9. Remove tacks holding cover over loop antenna. Remove four leads from loop antenna.
10. Remove four wood screws holding loop antenna in cabinet. Remove loop from cabinet.
11. Remove four hex nuts holding speaker in cabinet. Remove speaker.
12. Remove two hex nuts holding pre-amp. chassis in cabinet. Remove pre-amp. chassis.
13. Remove four screws holding tuning chassis in cabinet. Remove chassis from cabinet.





THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4720-11

VOLTAGE AND RESISTANCE READINGS TAKEN WITH RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0V.	0V.	1.8VDC	-.7VDC	1.8VDC	140VDC	6.3VAC	192VDC
2	6SA7	0V.	0V.	213VDC	97VDC	-11VDC§	0V.	6.3VAC	-.6VDC
3	6SK7	0V.	0V.	1.7VDC	-.7VDC	1.7VDC	100VDC	6.3VAC	205VDC
4	6SQ7	0V.	-.5VDC	0V.	-.5VDC	-.5VDC	75VDC	6.3VAC	0V.
5	6SC7	0V.	75VDC	-.4VDC	-.4VDC	60VDC	0V.	3.2VAC	3.2VAC
6	6V6GT	0V.	6.3VAC	250VDC	210VDC	0V.	250VDC	0V.	11VDC
7	5Y3GT	0V.	265VDC	265VDC	260VAC	0V.	260VAC	0V.	265VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SG7	0Ω	0Ω	300Ω	2.7 Meg.	300Ω	130KΩ	.1Ω	85KΩ
2	6SA7	0Ω	0Ω	80KΩ	90KΩ	22KΩ	.5Ω	.1Ω	2.7 Meg
3	6SK7	0Ω	0Ω	150Ω	2.7 Meg.	150Ω	90KΩ	.1Ω	80KΩ
4	6SQ7	0Ω	10 Meg.	0Ω	280KΩ	280KΩ	550KΩ	.1Ω	0Ω
5	6SC7	0Ω	150KΩ	4 Meg.	4 Meg.	220KΩ	0Ω	.1Ω	.1Ω
6	6V6GT	0Ω	.1Ω	80KΩ	80KΩ	440KΩ	85KΩ	0Ω	330Ω
7	5Y3GT	0Ω	80KΩ	80KΩ	160Ω	INF.	150Ω	INF.	80KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

TRADE NAME Hallicrafters, Model CA-2, CA-2A
MANUFACTURER The Hallicrafters Co., 2611 S. Indiana Ave., Chicago 16, Ill.
TYPE SET Battery Operated Crystal Controlled Transmitter and Superheterodyne Receiver
TUBES (SEVEN) Types, 12BE6 Converter, 12BA6 IF Amp., 12AT6 Det.-AVC-AF, 6V6GT Power Output, 6J5 Oscillator, 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY 12 Volt Storage Battery
RATING 2.8 Amp. @ 12V DC (Receiver) 4.5 Amp. @ 12V DC (Transmitter)
TUNING RANGE—BROADCAST 540-1610KC LONG WAVE 195-410KC XMTR FREQ. 3105KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Antenna dummy load consists of 100 MMFD capacitor in series with high side of signal generator with a 51 MMFD capacitor from antenna socket to chassis.

Loop antenna dummy consists of 20 micro henry coil bypassed by a 150 MMF. capacitor. Connect from loop socket to chassis.

In Step 17 A19 should be adjusted with 500 micro volt input. 1020 CPS should be down approximately 18DB from 400 CPS level.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Ant. Jack. Low side to chassis.	455KC	BC Ant. (1st position clockwise)	1000KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output in order given. Then repeat.
2	Antenna Dummy (See prealignment notes.)	"	600KC	"	600KC	"	A5	Adjust for maximum output
3	"	"	1400KC	"	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.
4	"	"	600KC	"	600KC	"	A7	Adjust for maximum output.
5	"	"	1400KC	"	1400KC	"	A8	" " " "
6	"	"	2110KC	"	1200KC	"		Twist or untwist gimmick for minimum image.
7	"	"	220KC	Beacon Antenna (4th position clockwise)	220KC	"	A9	Adjust for maximum output
8	"	"	380KC	"	380KC	"	A10	Adjust for maximum output. Repeat Stpes 7 & 8 until no further improvement can be made.
9	"	"	220KC	"	220KC	"	A11	Adjust for maximum output
10	"	"	380KC	"	380KC	"	A12	" " " "
11	"	"	1260KC	"	350KC	"		Twist or untwist gimmick for minimum image signal.
12	"	"	278KC	Tower (2nd position)		"	A13 A14	Adjust for maximum output in order given and repeat.
13	Loop Dummy (See prealignment notes)	High side to loop jack. Low side to chassis.	600KC	BC Loop (fully counter-clockwise)	600KC	"	A15	Adjust for maximum output
14	"	"	1400KC	"	1400KC	"	A16	Adjust for maximum output. Repeat Steps 13 & 14 until no further improvement can be made.
15	"	"	220KC	Beacon Loop (3rd position clockwise)	220KC	"	A17	Adjust for maximum output
16	"	"	380KC	"	380KC	"	A18	Adjust for maximum output. Repeat Steps 15 & 16 until no further improvement can be made.
17	"	"	300KC	"	300KC	"	A19	Connect audio oscillator to ext. modulation terminals of RF sig. gen. Set audio oscillator at 1020 CPS with 30% modulation. Adjust A19 for minimum output.

After transceiver has been installed in plane connect 0-1 RF ammeter in series with Ant. and Ant. load coil. Adjust inductance of load coil for maximum current. (Approximately .7 Amp.) Whistling or talking into mike should cause an increase of approximately 20% in antenna current.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		HALLICRAFTERS PART No.	STANDARD REPLACEMENT		
1	Converter	12BE6	12BE6	7CH	
2	IF Amp.	12BA6	12BA6	7BK	
3	Det.-AVC-AF	12AT6	12AT6	7BT	AF Amp. on Transmit
4	Power Output	6V6GT	6V6GT	7AC	Modulator on Transmit
5	Oscillator	6J5	6J5	6Q	
6	Power Amp.	6V6GT	6V6GT	7AC	
7	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

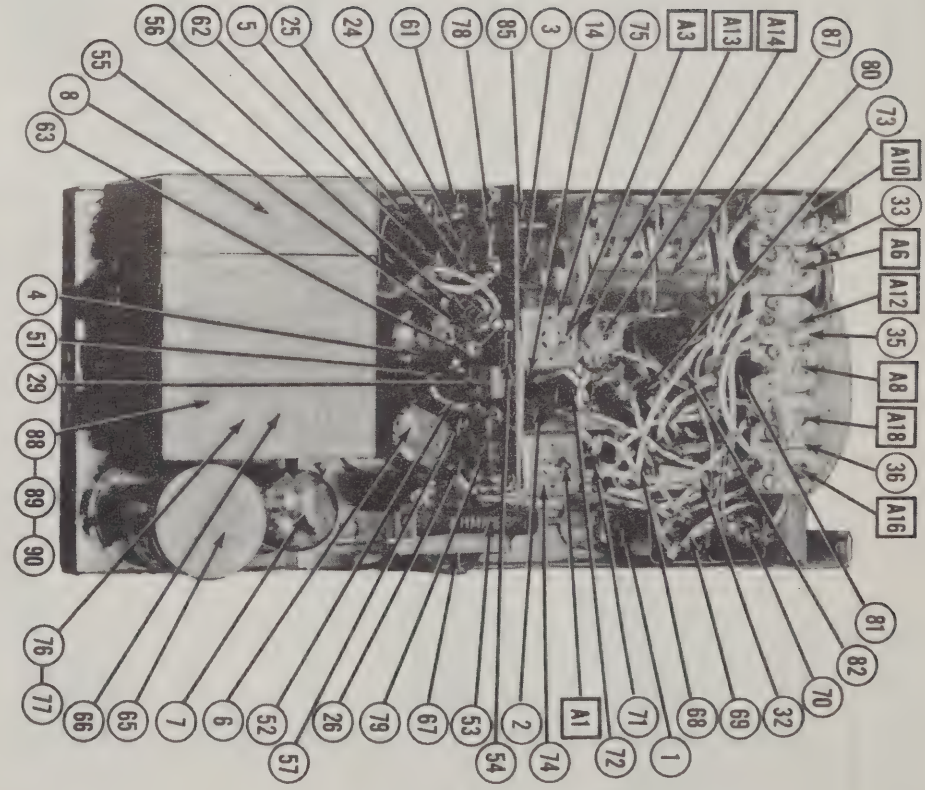
ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	HALLI-CRAFTERS PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
8A	8	450	45C104		M-2x8-450			BRL8845	Filter - Red
B	8	450							" - Red
C	20	150			M-2x20-150			BRL2215	Cathode Bypass-Yellow
D	20	150							" "
E	500	15			M-500-15			BRH155	Fil. Bypass
9	.05	150	46A099-3	TP426	TTR-1.5-05	TC-15	484-05	DT4S5	Hash Filter
10	.01	150	46A099-2	TP421	TTR-1.5-01	TC-11	484-01	DT4S1	Fil. Bypass
11A	.02	600	45AY203J	TP412	S-6-02	TC-12	684-02	DT6S2	Output Plate Bypass†
11B	.002	600	46AZ202J	TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass*
12	.01	150	46A099-2	TP421	TTR-1.5-01	TC-11	484-01	DT4S1	Cathode Bypass
13	.05	150	46A099-3	TP426	TTR-1.5-05	TC-15	484-05	DT4S5	Voice-Range Filter
14	.002	600	46A100-1	TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
15	.001	200	46A099-5	TP404	S-6-001	TC-21	684-001	DT6D1	" "
16	.25	200	46A099-6	TP430	TTF-1.5-25	TC-2	484-.25	DT4P25	Mic. Coupling
17	.0001	600	46A100-2	TP401	MO.5-31	TC-31	1468-0001	DT6T1	Diode RF Filter
18	.0005	600	46A100-3	TP403	S-6-0005	TC-35	1468-0005	DT6T5	" " "
19	.1	150	46A099-4	TP428	TTR-1.5-1	TC-1	484-.1	DT4P1	IF Screen Bypass
20	.1	150	46A099-4	TP428	TTR-1.5-1	TC-1	484-.1	DT4P1	Sens. Control Bypass
21	.01	150	46A099-2	TP421	TTR-1.5-01	TC-11	484-01	DT4S1	AVC Filter
22	.01	150	46A099-2	TP421	TTR-1.5-01	TC-11	484-01	DT4S1	Conv. Screen Bypass
23	.01	150	46A099-2	TP421	TTR-1.5-01	TC-11	484-01	DT4S1	Conv. Cathode Bypass
24	47	500	CM20A470M	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
25	100	500	CM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Coupling
26	220	500	CC36UK221K	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	RF Coupling
27	5	500	CM20A050M	MC205	MO.5-55	MS-55	1468-000005	5W5V5	Neon Ind. Coupling
28	150	500	CM20A151G	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Fixed Trimmer
29	470	500	CM20A471M	MC243	MO.5-34	1FM-34	1468-0004	5W5T4	AF Plate Bypass
30	150	500	CC36UK151K	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Fixed Trimmer
31	620	500	CC45UK621J						Fixed Pad Cer.
32	270	500	CC40TK271G						Fixed Pad Cer.
33	120	500	CC30UK121J						Fixed Trimmer Cer.
34	150	500	CM20A151G	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	Fixed Trimmer
35	75	500	CC25UK750J	MC230		1FM-475	1468-000075		Fixed Trimmer Cer.
36	75	500	CC25UK750J	MC230		1FM-475	1468-000075		Fixed Trimmer Cer.
88	.25	150	46A099-6						Hash Filter
89	.02	1600	46A098-1						Buffer
90	.02	1600	46A098-1						"

†Used in Model CA-2. *Used in Model CA-2A

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	HALLI-CRAFTERS PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
37A	50KΩ	½	25A568	MR34	D14-123	M-44-S	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 37A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	HALLI-CRAFTERS PART No.	IRC PART No.	
38	22KΩ	½	RC20AE223M	BTS-22K	Red-Red-Or. Oscillator Grid
39	1500Ω	½	RC20AE152M	BTS-1500	Br.-Grn.-Red Parasitic Suppressor
40	1500Ω	½	RC20AE152M	BTS-1500	Br.-Grn.-Red Parasitic Suppressor
41	150Ω	½	RC20AE151M	BW-½-150	Br.-Grn.-Br. Converter Cathode - See Note 1
42	4700Ω	½	RC20AE472M	BTS-4700	Yl.-Vi.-Red Converter Screen Dropping
43	2.2 Meg.	½	RC20AE225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
44	68Ω	½	RC20AE680M	BW-½-68	Blue-Gray-Blk. IF Cathode
45	100KΩ	½	RC20AE104M	BTS-100K	Br.-Blk.-Yl. IF Screen Bleeder
46	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Diode Filter
47	1 Meg.	½	RC20AE105M	BTS-1 Meg.	Br.-Blk.-Grn. Diode Load
48	1000Ω	½	RC20AE102M	BTS-1000	Br.-Blk.-Red AF Cathode
49A	220Ω	½	RC20AE221M	BW-½-220	Red-Red-Br. Microphone Load -See Note 2
49B	1800Ω	½	RC20AE182M	BTS-1800	Br.-Gray-Red Microphone Load-Note 3
50	10 Meg.	½	RC20AE106M	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
51	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
52	470KΩ	½	RC20AE474M	BTS-470K	Yl.-Vi.-Yl. Output Grid
53	3900Ω	10	24BG392E	AB-4000	Output Cathode
54	15Ω	½	RC20AE150M	BW-½-15	Br.-Grn.-Blk. Output Cathode
55	100Ω	1	RC30AE101M	BW-1-100	Br.-Blk.-Br. Output Cathode
56	220Ω	1	RC30AE221M	BW-1-220	Red-Red-Br. Output Cathode
57	2200Ω	½	RC20AE222M	BTS-2200	Red-Red-Red Filter
58A	39Ω	2	RC40AE390M	BW-2-39	Or.-White-blk. Series Pilot Light -See Note 2
58B	68Ω	2	RC40AE680M	BW-2-68	Blue-Gray-Blk. Series Pilot Light-Note 3
59	150Ω	½	RC20AE151M	BW-½-150	Br.-Grn.-Br. Hash Suppression
60	75Ω	½	RC20AE750M	BW-½-82	Vi.-Grn.-Blk. Microphone Load
61	47KΩ	½	RC20AE473M	BTS-47K	Yl.-Vi.-Or. Crystal Oscillator Grid
62	10KΩ	½	RC20AE103M	BTS-10K	Br.-Blk.-Or. Power Amplifier Grid
63	100Ω	½	RC20AE101M	BW-½-100	Br.-Blk.-Br. Power Amplifier Cathode
64	47Ω	½	RC20AE470M	BW-½-47	Yl.-Vi.-Blk. Modulator Cathode

Note 1 - Some models use 220Ω in this application. IRC replacement BW-½-220.
Note 2 - Used in CA-2 Note 3 - Used in CA-2A

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				HALLI-CRAFTERS PART No.	MALLORY PART No.	RADIART PART No.	
65	Interrupter	12	180~	27A139		5517-12	

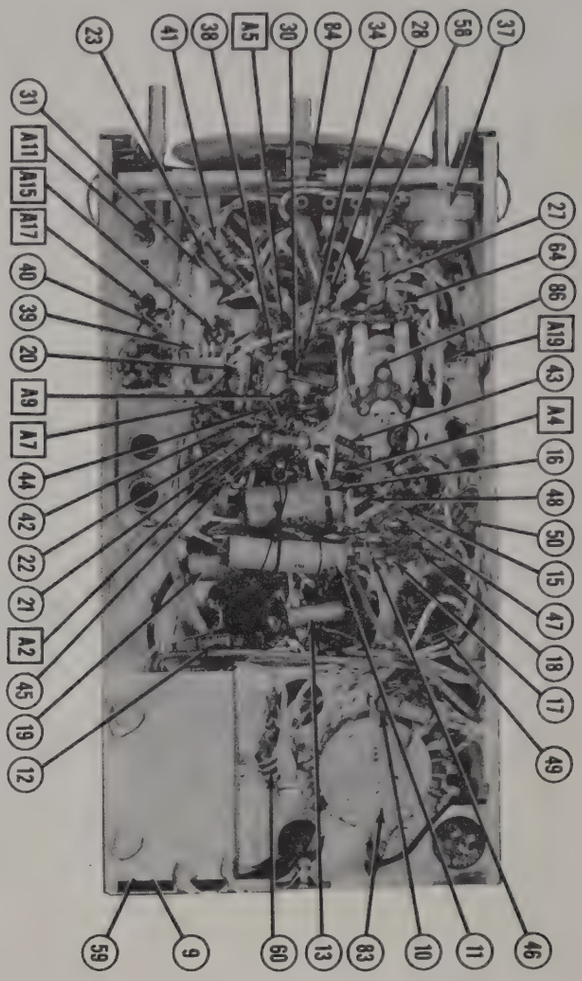
TRANSFORMER VIBRATOR

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	HALLICRAFTERS PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
66	12V DC @ 3.5A	560V CT @ .106A			52C126			

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		HALLICRAFT. PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.1	PRI.	SEC.1					
67	4200Ω	3.2Ω	170Ω	.6Ω	55A075				
	TURNS RATIO								
	Pri. to Sec.2			Sec.2					
	15 to 1			1.3Ω					

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

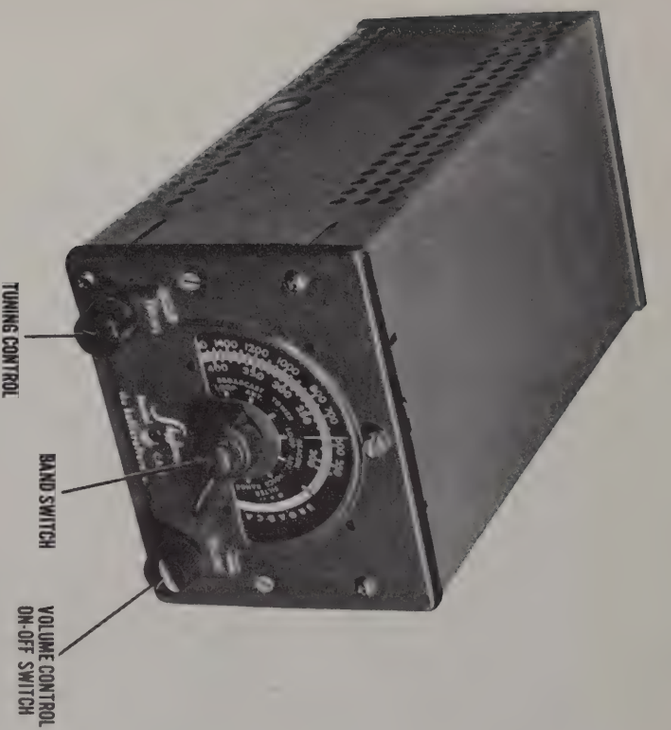
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	HALLI-CRAFTERS PART No.	MEISSNER PART No.	
68	BC Ant. Coil, Loop	.5Ω	2.3Ω	51B864		
69	Beacon Ant. Coil, Loop	.5Ω	22Ω	51B863		
70	BC Ant.Coil	34Ω	2.8Ω	51B860		
71	Beacon Ant. Coil	90Ω	16Ω	51B859		
72	BC Osc. Coil		3.5Ω	51B862		
73	Beacon Osc. Coil		8.5Ω	51B861		
74	Input IF	11Ω	11Ω	50B206		
75	Output IF	11Ω	11Ω	50B207		
76	RF Choke‡			53A100		‡Enclosed in power assembly.
77	" " ‡			53A100		
78	" "		7Ω	53A101		
79	" "		7Ω	53A101		
80	Range Filter		0Ω	56B072		

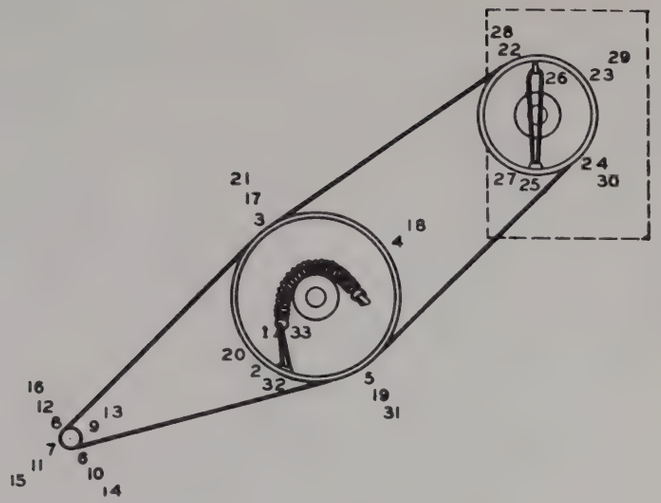
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					HALLI-CRAFTERS PART No.		
81	Bayonet	6-8	.25	Blue	39A003		Type 44

MISCELLANEOUS

ITEM No.	PART NAME	HALLICRAFTERS PART No.	NOTES
82	Bandswitch	60C260	
83	Spark Plate		
84	Lamp	39A012	Neon Indicator
85	Crystal	19A1210	3105KC
86	Relay	21B072	
87	2 Gang Var.Cap.	48C182	(16-448 MMF, 16-448 MMF)
	Dial Scale	83C291	
	Dial Window	22B170	





Cut a 30" length of 12 lb. test dial cord and tie one end of the tension spring on the pulley mounted on the hub of the bandswitch at position "1" on the diagram. Follow the numbers from "1" to "33", stretch the tension spring and tie cord securely. Cut off excess cord.

Dial cable stringing procedure.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
	1	12BE6	-5.3VDC§	1.1VDC	12VDC	0V.	100VDC	70VDC	0V.	-
	2	12BA6	0V.	0V.	12VDC	0V.	100VDC	100VDC	3VDC	-
	3	12AT6	-.1VDC	.4VDC	12VDC	0V.	0V.	0V.	83VDC	-
	4	6V6GT	0V.	6VDC	300VDC	300VDC	75VDC	0V.	0V.	108VDC
‡	5	6J5	0V.	6VDC	230VDC	0V.	-10VDC§	11VDC	12VDC	11VDC
‡	6	6V6GT	0V.	0V.	210VDC	210VDC	7VDC	0V.	6VDC	11VDC
	7	6X5GT	0V.	6VDC	280VAC	0V.	280VAC	0V.	12VDC	300VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

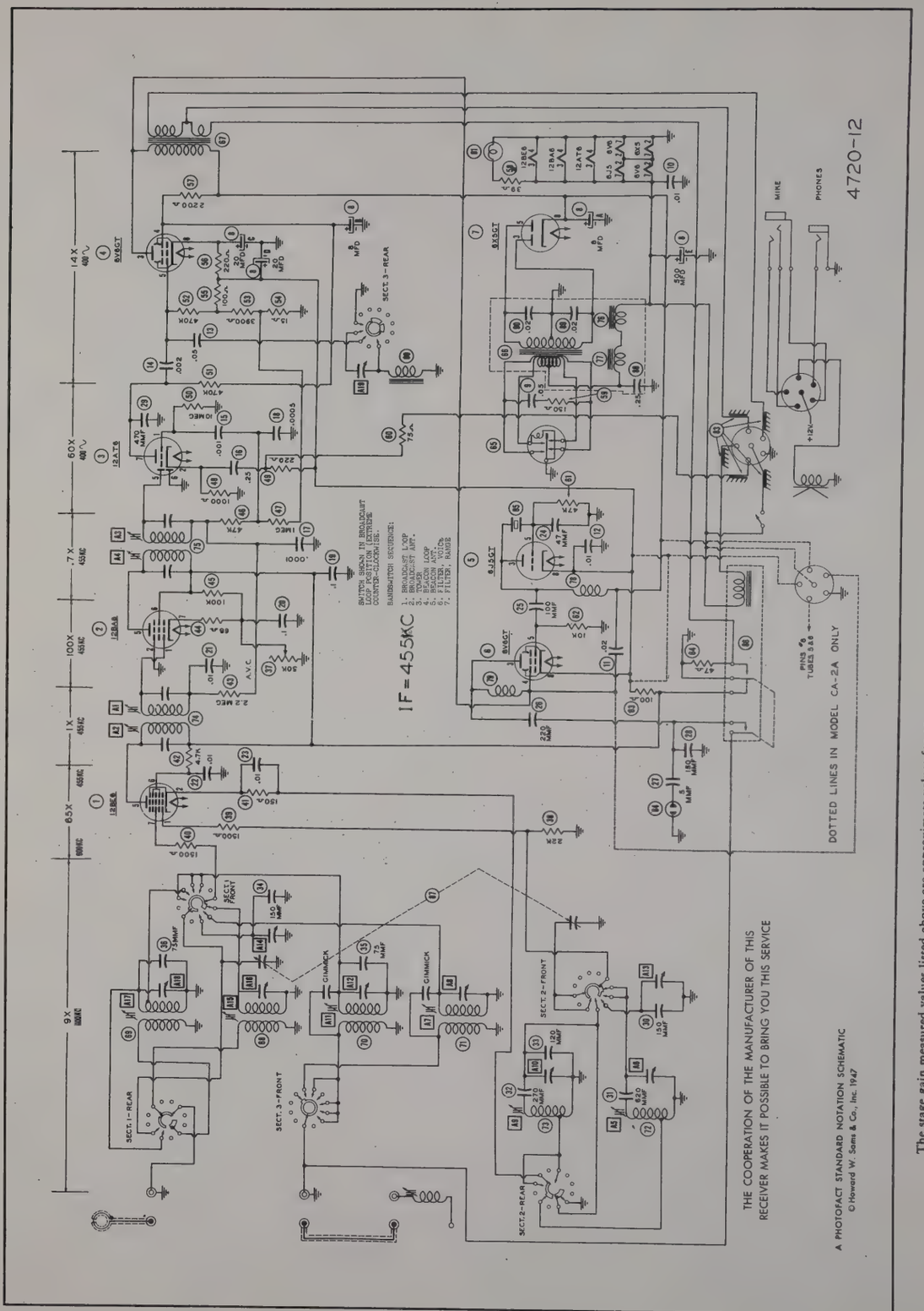
RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
	1	12BE6	24KΩ	160Ω	2Ω	0Ω	4KΩ	9KΩ	1.5KΩ	-
	2	12BA6	3.5 Meg.	0Ω	2Ω	0Ω	4KΩ	4KΩ	90Ω	-
	3	12AT6	10 Meg.	1KΩ	2Ω	0Ω	1.1 Meg.	0Ω	520KΩ	-
	4	6V6GT	0Ω	1Ω	150KΩ	150KΩ	470KΩ	1.2Ω	0Ω	4KΩ
‡	5	6J5	0Ω	1Ω	150KΩ	INF.	47KΩ	4KΩ	2Ω	4KΩ
‡	6	6V6GT	0Ω	0Ω	150KΩ	150KΩ	10KΩ	INF.	1Ω	4KΩ
	7	6X5GT	0Ω	1Ω	105Ω	INF.	95Ω	INF.	2Ω	150KΩ

‡ TAKEN WITH RELAY CLOSED.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 12 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.


4720-12
IF = 455KC
DOTTED LINES IN MODEL CA-2A ONLY
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

KNIGHT MODEL 5C-290
BATTERY-LINE OPERATED

KNIGHT MODEL 5C-290
BATTERY-LINE OPERATED

KNIGHT MODEL 5C-290

TRADE NAME	Knight, Model 5C-290
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago 7, Ill.
TYPE SET	Three Power Portable Superheterodyne with Loop Antenna
TUBES (FOUR)	Types, 1A7GT Converter, 1N5GT IF Amp., 1H5GT Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY RATING	110-125 Volts AC-DC or 9 Volts DC "A" Supply and 90 Volts DC "B" Supply .140 Amp. @ 117 Volts AC or 52MA @ 9 Volts DC and 13MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Volume control should be at maximum position output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD	High side to rear stator of tuning cap. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2	.1 MFD	"	1650KC	"	"	A5	Adjust for maximum output. Replace receiver in cabinet.
3		Loop	1400KC	Tune for maximum output.	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. A6 is accessible through a hole in top of cabinet.

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DATE 12/47 SET #30 FOLDER #4720-13

PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 5C-290

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1A7GT	1A7GT	7Z	
2	IF Amp.	1N5GT	1N5GT	5Y	
3	Det.-AVC-AF	1H5GT	1H5GT	5Z	
4	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: KNIGHT PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	EC-4	FP357	DY-3x40-150	EL-340		UP44415	Filter
B	40	150							"
C	40	150							"
6	70	25	EC-6	TC2501	M-100-25	ULC-102	PRS25-100		Filament Bypass
7	.05	400	PC-5	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.005	600	PC-6	TP408	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
9	.005	600	PC-6	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
10	.005	600	PC-6	TP408	S-6-005	TC-25	684-005	DT6D5	" "
11	.05	400	PC-5	TP426	S-4-05	TC-15	484-05	DT4S5	Audio Plate Decoupling
12	.1	400	PC-8	TP428	S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
13	.05	400	PC-5	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	.1	400	PC-8	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
15	.05	400	PC-5	TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
16	100	500	MC-2	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Audio Plate Bypass
17	100	500	MC-2	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode Filter
18	100	500	MC-2	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Cap.

CONTROLS

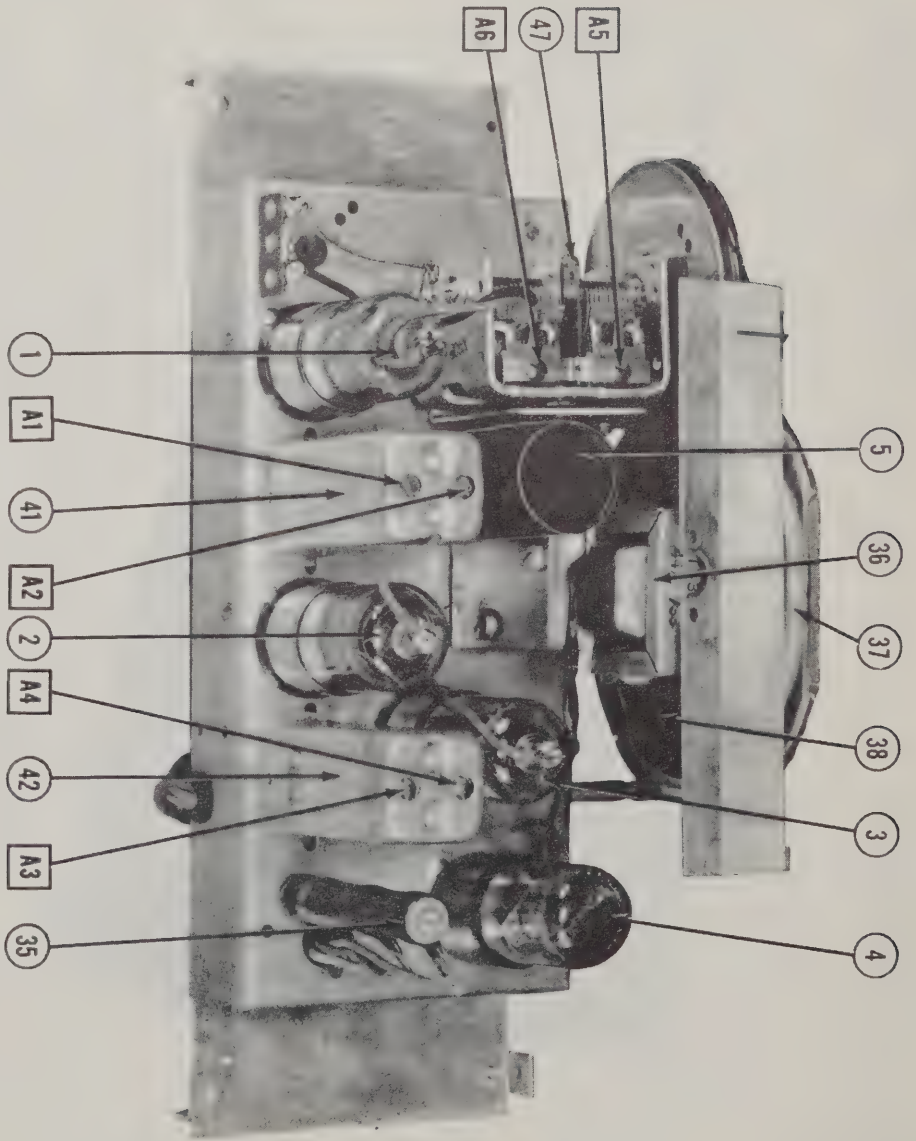
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	½	VC-2	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
20	250KΩ	½	1R-20	BTS-220K	Red-Grn.-Yl. Oscillator Grid
21	250KΩ	½	1R-20	BTS-220K	Red-Grn.-Yl. Line Isolation
22	47KΩ	½	1R-10	BTS-47K	Yl.-Vi.-Or. Converter Screen Dropping
23	3.3 Meg.	½	1R-23	BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
24	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Diode RF Filter
25	10 Meg.	½	1R-3	BTS-10 meg.	Br.-Blk.-Blue AF Grid
26	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. AF Plate Load-See Note 1
27	470KΩ	½	1R-11	BTS-470K	Yl.-Vi.-Yl. AF Plate Decoupling
28	2.2 Meg.	½	1R-13	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
29	680Ω	½	1R-32	BTS-680	Blue-Gray-Br. Filament String
30	270Ω	½	1R-33	BW-½-270	Red-Vi.-Br. Filament String
31	330Ω	½	1R-21	BW-½-330	Or.-Or.-Br. Filament String
32	620Ω	½	1R-39	BTS-680	Blue-Red-Br. Filter
33	620Ω	½	1R-39	BTS-680	Blue-Red-Br. "
34	82Ω	2	1R-35	BW-2-82	Gray-Red-Blk. Surge Limiter
35A	1050Ω		WR-3A	AB-1000	Filament Dropping
B	1050Ω			AB-1000	" "
C	40Ω			ABA-50	" " - See Note 2

Note 1 - Some models use 1 Meg. in this application. IRC replacement BTS-1 Meg.
Note 2 - On IRC replacement set slider at 40Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
36	6400Ω	3.1Ω	250Ω	.4Ω	Part of SPK-5	A-3878*	T22S46*	A-2931*	*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			KNIGHT PART No.	JENSEN PART No.		
37	FIELD PM	VC IMP. 3.1Ω	SPK-5	ST-105† Mod. P5-X		†Drill and tap magnet frame and trim flange.
38	CONE DIA. 4-3/4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

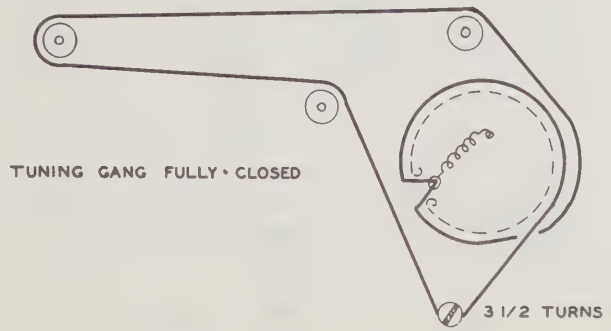
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	KNIGHT PART No.	MEISSNER PART No.
39	Loop Ant.		1.5Ω	LL-10	
40	Osc. Coil	.3Ω	1Ω	LO-8	14-1040
41	Input IF	19Ω	20Ω	LI-3	16-6666
42	Output IF	19Ω	19Ω	LI-4	16-6667

BATTERIES

ITEM No.	VOLTAGE	KNIGHT PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
43	9V "A"		#746			2 Used in Series
44	90V "B"			#482		

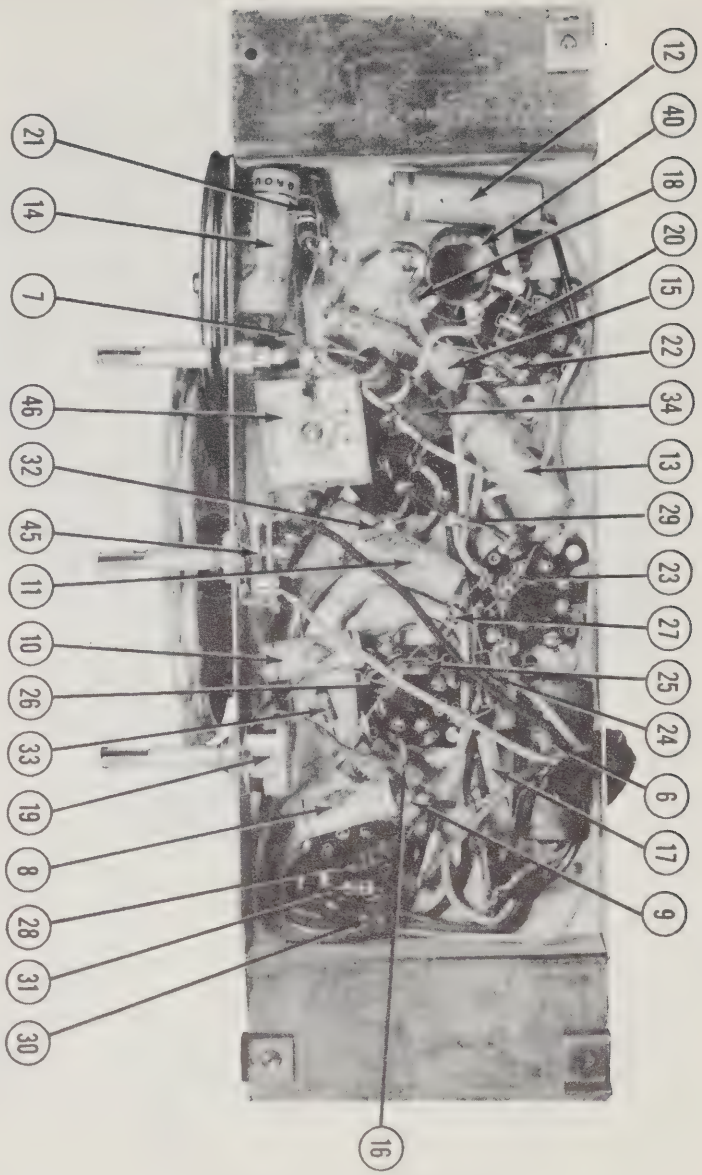
MISCELLANEOUS

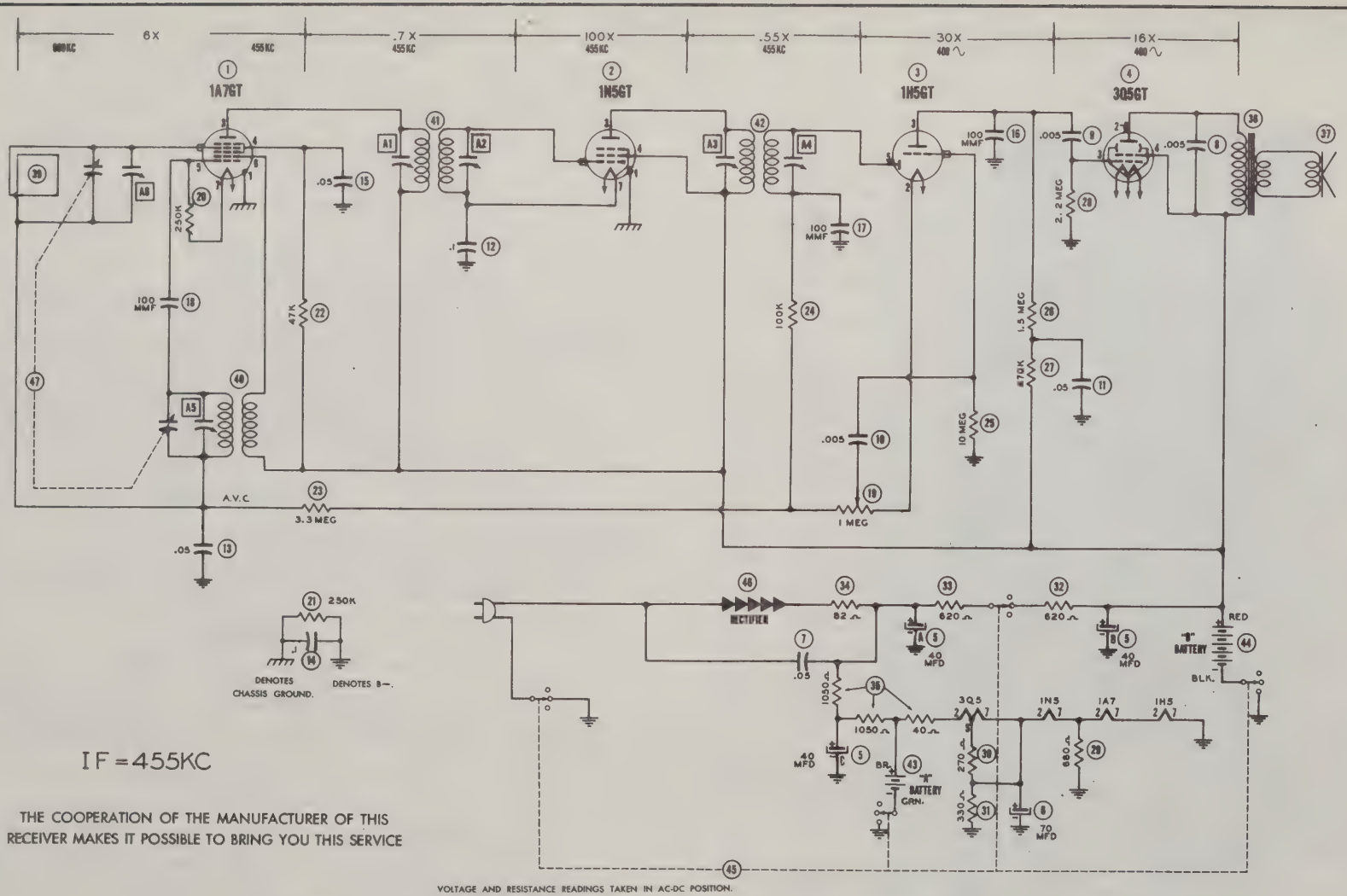
ITEM No.	PART NAME	KNIGHT PART No.	NOTES
45	Switch	SW-5	Off-AC-DC-Batt.
46	Rectifier	SR-1	Selenium
47	2 Gang Var. Cap.	GC-4	(37-216 MMF, 37-468 MMF)
A6	Trimmer	TC-7	Ant. Adj.



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





IF = 455KC

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	0V.	2.7VDC	90VDC	42VDC	-7.7VDC§	90VDC	1.3VDC	0V.	0V.
2	1N5GT	0V.	4VDC	90VDC	90VDC	-.2VDC	90VDC	2.7VDC	0V.	2.7VDC
3	1H5GT	0V.	1.3VDC	42VDC	0V.	-.3VDC	77VDC	0V.	-.3VDC	0V.
4	3Q5GT	0V.	6.6VDC	90VDC	95VDC	0V.	9VDC	4VDC	5.4VDC	-

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Cap
1	1A7GT	230KΩ	*	3.5KΩ	50KΩ	260KΩ	3.5KΩ	*	INF.	4 Meg.
2	1N5GT	230KΩ	*	3.5KΩ	3.5KΩ	1 Meg.	3.5KΩ	*	4 Meg.	40Ω
3	1H5GT	INF.	*	1.5 Meg.	10 Meg.	1.2 Meg.	560KΩ	0Ω	1.2 Meg.	10 Meg.
4	3Q5GT	0Ω	*	4KΩ	3.5KΩ	2 Meg.	85Ω	*	*	-

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

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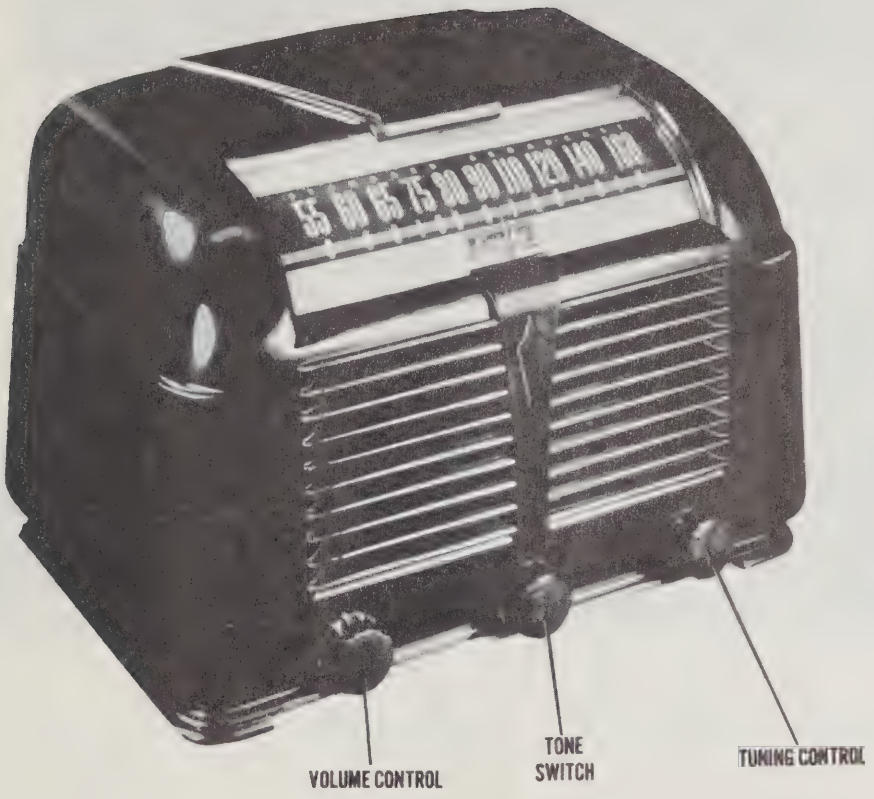
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-13

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to B- during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

KNIGHT MODEL
6C-225



KNIGHT MODEL
6C-225

KNIGHT MODEL 6C-225

TRADE NAME	Knight, Model 6C-225
SUPPLIER	Allied Radio Corp., 833 W. Jackson Blvd., Chicago, 7, Ill.
TYPE SET	AC-DC Operated Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 14A7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 35A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1620KC RATING .210 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer at reference mark at left end of dial back plate.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 14Q7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	100MMFD	High side to ext. ant. lead. Low side to B-.	1620KC	"	"	A5	Adjust for maximum output.
3	100MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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DATE 12/47 SET #30 FOLDER #4720-14

PARTS LIST AND DESCRIPTIONS

KNIGHT MODEL 6C-225

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: KNIGHT PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14A7	14A7	8V	
2	Converter	14Q7	14Q7	8AL	
3	IF Amp.	14A7	14A7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	35A5	35A5	6AA	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	KNIGHT PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	N-3658	FP214	DY-2x40-150	EL-25	AF88D	UP4415	■ Filter
B	40	150							▲ "
8	.05	400	N-1346	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.01	400	N-1344	TP421	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
10	.05	400	N-1346	TP426	S-4-05	TC-15	484-05	DT4S5	Tone Comp.
11	.01	400	N-1344	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.005	600	N-4894	TP408	S-6-005	TC-25	684-005	DT6D5	" "
13	.2	200	N-5160	TP429	S-4-2	TC-2	484-.2	DT4P2	Line Isolation
14	.1	200	N-1351	TP428	S-4-1	TC-1	484-.1	DT4P1	Conv. Decoupling
15	.05	200	N-1345	TP426	S-4-05	TC-15	484-05	DT4S5	RF Screen Bypass
16	.05	200	N-1345	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	.0005	600	N-4890	TP403	S-6-0005	TC-35	1468-0005	DT6T5	AF Plate Bypass
18	.01	400	N-1344	TP421	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Coupling
19	100	500	N-1374	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
20	150	500	N-2383	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	RF Coupling

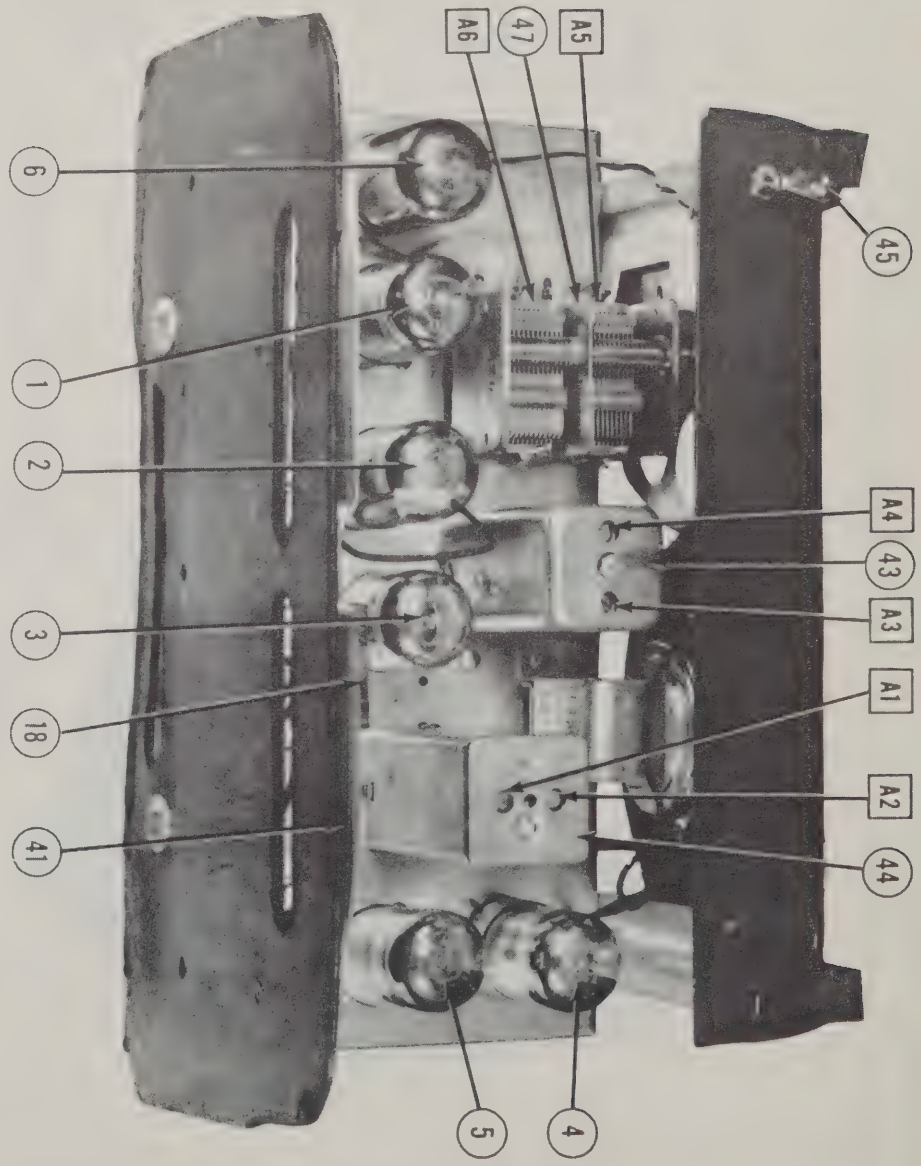
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	KNIGHT PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	N-5026 or	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		N-4843	Not Req.	E	KSS-3	Attach to 21A per instructions
C	Switch		Not Req.	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	KNIGHT PART No.	IRC PART No.	IDENTIFICATION CODES
22	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. RF Screen Dropping
23	2200Ω	½	N-4896	BTS-2200	Red-Red-Red RF Plate Load
24	47KΩ	½	N-4087	BTS-47K	Yl.-Vi.-Or. Converter Grid
25	22KΩ	½	N-5351	BTS-22K	Red-Red-Or. Oscillator Grid
26	470Ω	½	N-4066	BTS-470	Yl.-Vi.-Br. Decoupling
27	1 Meg.	½	N-1262	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
28	82Ω	½	N-5857	BW-½-82	Gray-Red-Blk. IF Cathode
29	220KΩ	½	N-4026	BTS-220K	Red-Red-Yl. Line Isolation
30	33Ω	1	N-4628	BW-1-33	Or.-Or.-Blk. Line Dropping
31	47KΩ	½	N-4063	BTS-47K	Yl.-Vi.-Or. Series Volume Control
32	4.7 Meg.	½	N-4061	BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
33	220KΩ	½	N-4988	BTS-220K	Red-Red-Yl. AF Plate Load
34	470KΩ	½	N-4027	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	180Ω	½	N-4067	BW-½-180	Br.-Gray-Br. Output Cathode
36	1200Ω	1	N-4900	BTA-1200	Br.-Red-Red Filter
37	33Ω	½	N-4022	BW-½-33	Or.-Or.-Blk. Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		KNIGHT PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
38	2100Ω	2.6Ω	205Ω	.55Ω	N-4875	A-3876*		A-2928*	*Add extra filter to reduce hum level.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			KNIGHT PART No.	JENSEN PART No.		
39	FIELD PM	VC IMP. 2.6Ω	N-4868	ST-105† Mod. P5-X		†Fabricate new mounting bracket.
40	CONE DIA. 4-5/8"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

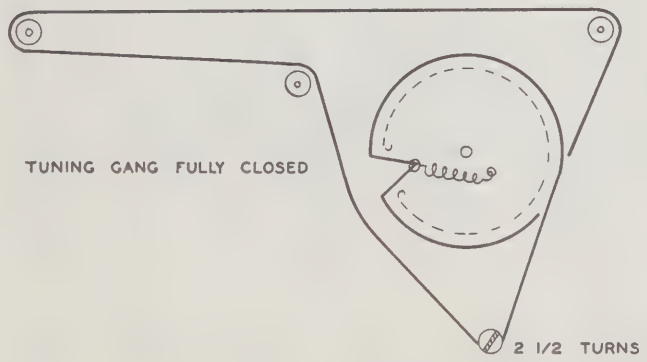
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	KNIGHT PART No.	MEISSNER PART No.	
41A	Loop Ant.	.1Ω	1.5Ω	N-5937		Used with Tuning Gang N-5286
B	Loop Ant.			N-5765		Used with Tuning Gang N-5936
42	Osc. Coil	.8Ω	6.1Ω	N-4810	14-1040#	#Add 50 MMFD from grid to high side tuning cap.
43	Input IF	13Ω	14Ω	N-4872	16-6658	
44	Output IF	19Ω	19Ω	N-5571	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					KNIGHT PART No.		
45	Bayonet	6-8	0.15	Brown			Type 47

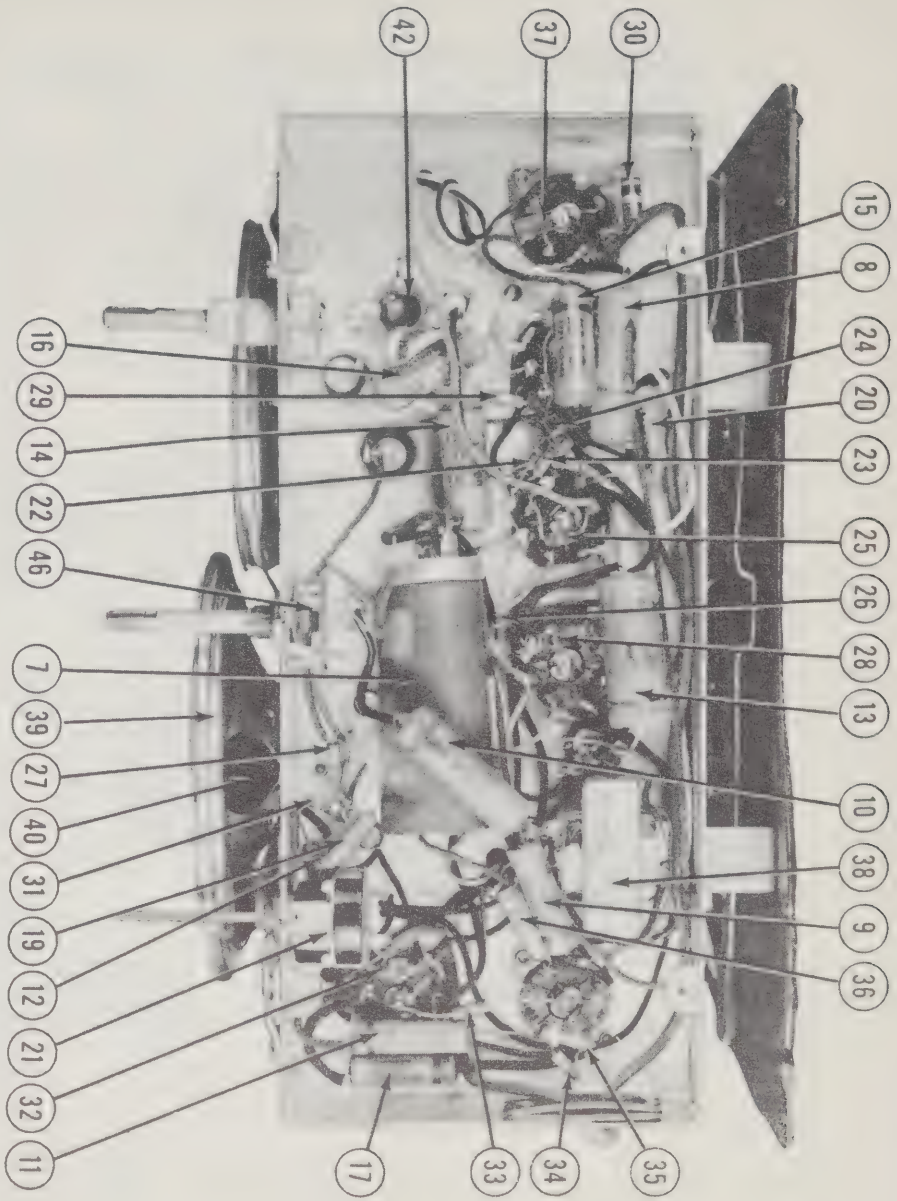
MISCELLANEOUS

ITEM No.	PART NAME	KNIGHT PART No.	NOTES
46	Tone Switch	N-4942	
47A	2 Gang Var. Cap.	N-5286	(30-465 MMF, 33-197 MMF)
B	" " "	N-5936	Alternate

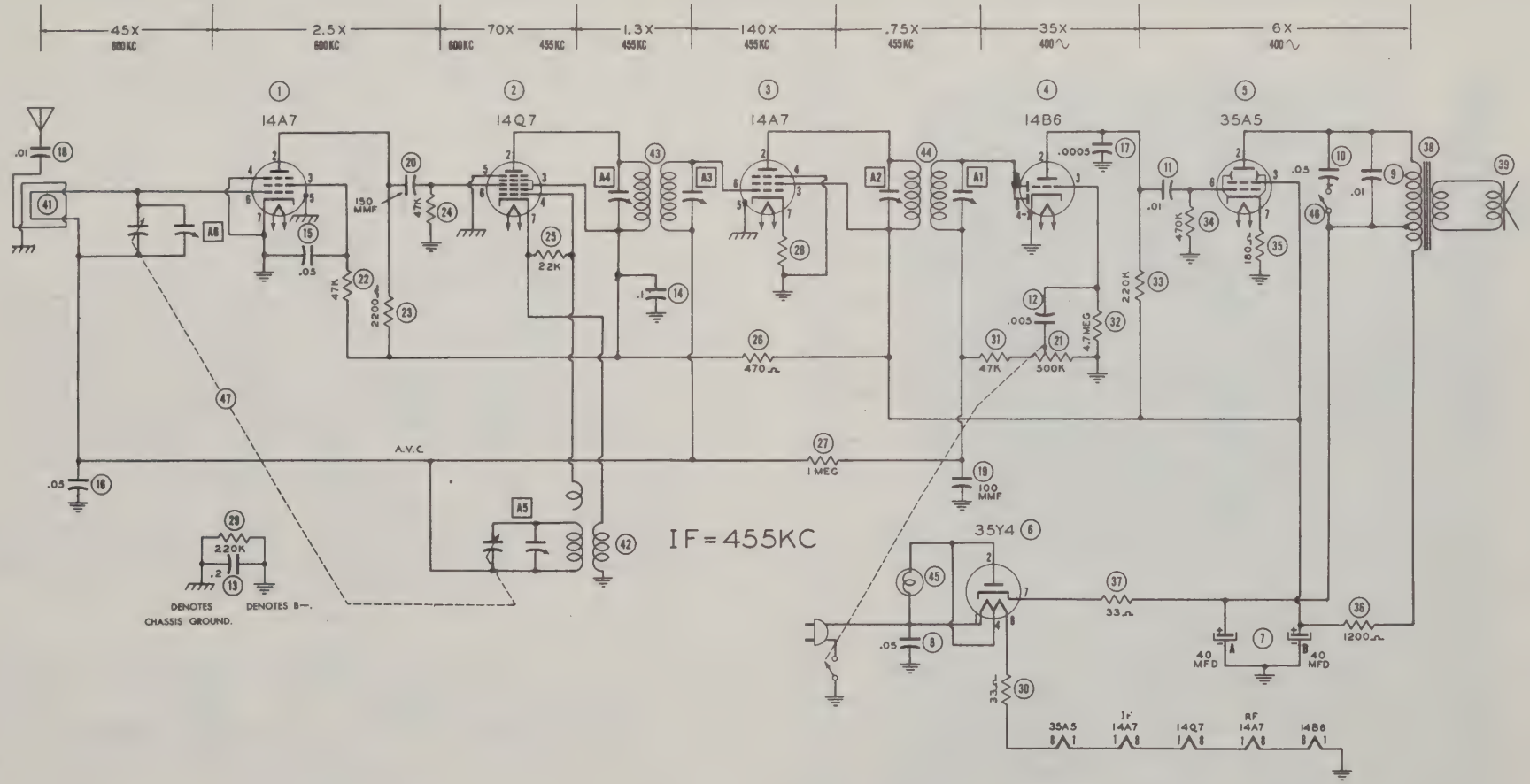


DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



KNIGHT MODEL 60-225



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14A7	24VAC	71VDC	42VDC	0V.	0V.	-.4VDC	0V.	12VAC
2	14Q7	37VAC	78VDC	78VDC	-12VDC§	0V.	-.1VDC	0V.	24VAC
3	14A7	49VAC	83VDC	83VDC	0V.	0V.	-.4VDC	.9VDC	37VAC
4	14B6	0V.	60VDC	-.8VDC	0V.	-.6VDC	-.6VDC	0V.	12VAC
5	35A5	49VAC	108VDC	83VDC	0V.	0V.	0V.	5.6VDC	82VAC
6	35Y4	117VAC	113VAC	113VDC	113VAC	0V.	82VAC	115VDC	87VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14A7	25Ω	60KΩ	105KΩ	0Ω	220KΩ	1.6 Meg.	0Ω	13Ω
2	14Q7	38Ω	60KΩ	60KΩ	22KΩ	220KΩ	47KΩ	.8Ω	25Ω
3	14A7	50Ω	60KΩ	60KΩ	0Ω	220KΩ	1.6 Meg.	85Ω	38Ω
4	14B6	0Ω	280KΩ	4.5 Meg.	0Ω	520KΩ	520KΩ	0Ω	13Ω
5	35A5	50Ω	60KΩ	60KΩ	INF.	0Ω	500KΩ	180Ω	80Ω
6	35Y4	140Ω	138Ω	60KΩ	138Ω	INF.	80Ω	60KΩ	115Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-14

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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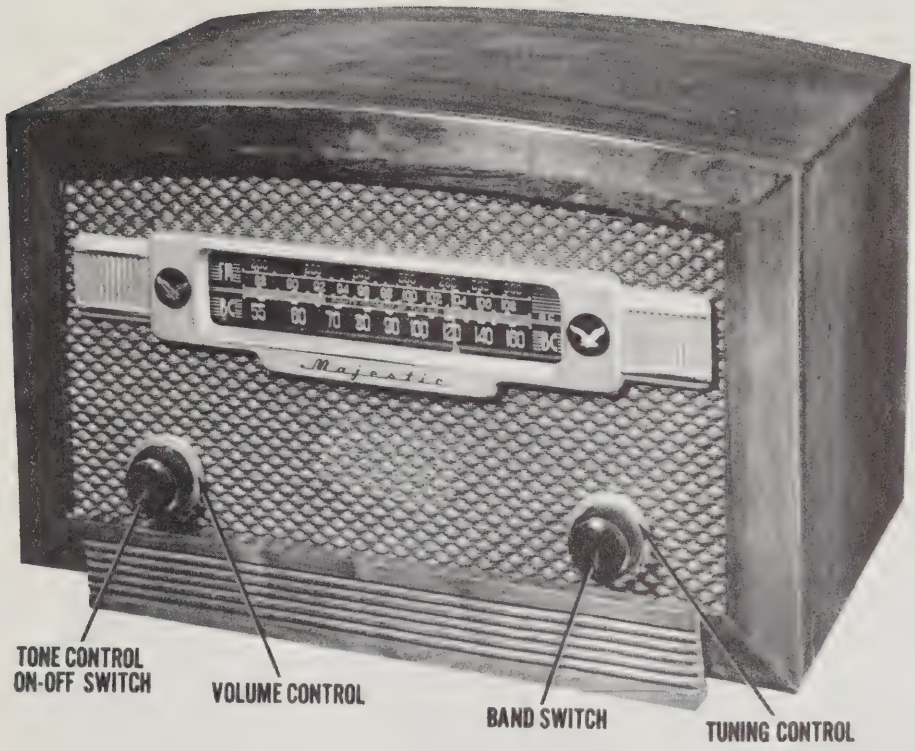
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MAJESTIC MODEL
8FM744 (Ch. 8BO6D)



MAJESTIC MODEL
8FM744 (Ch. 8BO6D)

TRADE NAME	Majestic, Model 8FM744 (Ch. 8BO6D)
MANUFACTURER	Majestic Radio & Tel. Corp, Elgin, Ill.
TYPE SET	AC-DC Operated FM-AM Superheterodyne Receiver with Loop Ant.
TUBES (EIGHT)	Types, 6BA6 RF Amp., 6BE6 Converter, 6SG7 1st IF Amp., 6SG7 2nd IF Amp., 6SH7 Limiter, 6S8GT Disc.-Det.-AVC-AF, 25L6GT Power Output, 25Z6GT Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING .460 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1630KC — FREQ. MOD. 87.5-109MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD.	High side to rear "AM" stator of Tuning Cap. Low side to chassis.	455KC	BC (counter-clock-wise)	600KC	Across voice coil	A1,A2, A3,A4, A5,A6.	Adjust for maximum output If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	"	"	"	"	"	"	A7	Adjust for minimum output.
3		Loop	1500KC	"	1500KC	"	A8	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	"	"	Tune for maximum output.	"	A9	Adjust for maximum output.
5		"	600KC	"	"	"	A10	Rock tuning cap. and adjust for maximum output. Repeat Steps 3, 4 & 5 until no further improvement can be made.

FOR FM ALIGNMENT SEE NEXT PAGE OF THIS FOLDER.

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DATE 12/47 SET #30 FOLDER #4720-15

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

(Connect synchronized sweep voltage from signal generator to horizontal amplifier.)

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
6	.05 MFD.	High side to Pin 4 (grid) of 6SG7 2nd IF Tube (4). Low side to chassis.	10.7MC (Freq. modulated at 60∿, 300KC deviation.)	FM (clockwise)	88MC	Vertical amplifier to Pin #3 of test socket (Point A). Ground to chassis.	A13,A14	Adjust for maximum amplitude and symmetry of pattern per Fig. 1.
7	.05 MFD.	High side to Pin 4 (grid) of 6SG7 1st IF tube (3). Low side to chassis.	"	"	"	"	A15,A16	"
8	.05 MFD.	High side to junction of wave trap and resistor 51 low side to chassis	"	"	"	"	A17,A18	"
9	.05 MFD.	"	"	"	"	Vertical amplifier to Pin #1 of test socket (Point B). Ground terminal to chassis	A11,A12	Adjust for maximum amplitude and symmetry with maximum straightness of diagonal line per Fig. 2.
10	300Ω carbon res.	High side to one FM dipole terminal in series with 300Ω. Low side to other dipole terminal.	106MC (Freq. modulated at 60∿, 300KC deviation.)	"	106MC	Vertical amplifier to Point A. Ground to chassis	A19	Center the pattern in the center of the scope sweep line per Fig. 1.
11	"	"	"	"	"	"	A20	Adjust for maximum amplitude.
12	"	"	88MC (Freq. modulated at 60∿, 300KC deviation.)	"	88MC	"	A21	Center the pattern in the center of the scope sweep line per Fig. 1.
13	"	"	"	"	"	"	A22,A23	Adjust for maximum amplitude.

FIGURE 1

FM ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6	.05 MFD.	High side to Pin 4 (grid) of 6SH7. Low side to chassis.	10.7MC (unmodulated)	FM (clockwise)	88MC	DC probe to blank terminal of disc. trans.#88 (Point C). Common lead to chassis.	A11	Adjust for maximum deflection.
7	.05 MFD.	"	"	"	"	DC probe to point B. Common lead to chassis.	A12	Use a zero center scale VTVM if available. Adjust for zero reading.
8	.05 MFD	High side to Pin 4 (grid) of 6SG7. 2nd IF Tube #4. Low side to chassis.	"	"	"	DC probe to Point A. Common lead to chassis.	A13,A14	Adjust for maximum deflection.
9	.05 MFD	High side to Pin 4 (grid) of 6SG7 1st IF Tube #3. Low side to chassis.	"	"	"	"	A15,A16	"
10	.05 MFD	High side to junction of wave trap coil and resistor 51. Low side to chassis.	"	"	"	"	A17,A18	"
11	300Ω car.res.	High side to one FM dipole terminal in series with 300Ω. Low side to other dipole terminal.	106MC	"	106MC	"	A19	"
12	"	"	"	"	Tune for maximum deflection.	"	A20	"
13	"	"	88MC	"	88MC	"	A21	"
14	"	"	"	"	Tune for maximum deflection.	"	A22, A23	Adjust for maximum deflection. Repeat Steps 11, 12, 13 and 14 until no further improvement can be made.

FIGURE 2

FOR AM ALIGNMENT SEE FRONT PAGE OF THIS FOLDER.

6
7
91
96
78
8
80
81
76
79
88
A2
A1
2
A21
A19
95
A8
98
A10
A7
A22
A20
1
A9
A23
3
A4
A3
89
4
82
A6
A5
90
5

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	6BA6	6BA6	7BK	
2	Converter	6BE6	6BE6	7CH	
3	1st IF Amp.	6SG7	6SG7	8BK	
4	2nd IF Amp.	6SG7	6SG7	8BK	
5	Limiter	6SH7	6SH7	8BK	
6	Discrim. Det. AVC	6S8GT	6S8GT	8CB	
7	Power Output	25L6GT	25L6GT	7AC	
8	Rectifier	25Z6GT	25Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9	20	150	19-32	TC45	M-20-150	UT-201	PRS150-20	BR2015	Filter
10A	50	150	19-44	2N520	DSB-5030-150	TA-530	PRSA150-50-30	BRD3515	" - Red
B	30	150							" - Blue
C	100	10		TC2501	M-100-12	UHC112	PRS25-100	BRH121	Cathode Bypass-Orange
11	.05	400	016-8	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
12	.01	600	017-5	TP410	S-6-01	TC-11	684-01	DT6S1	Output Plate Bypass
13	.01	400	016-5	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
14	.005	600	017-4	TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp.
15	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	Control Isolation
16	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	Tone Compensation
17	.002	600	017-2	TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
18	.01	400	016-5	TP421	S-4-01	TC-11	484-01	DT4S1	Limiter Plate Decoup.
19	.01	400	016-5	TP421	S-4-01	TC-11	484-01	DT4S1	RF Bypass Pwr. Supply
20	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	2nd IF Cathode Bypass
21	.01	400	016-5	TP421	S-4-01	TC-11	484-01	DT4S1	RF Bypass Pwr. Supply
22	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
23	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	" "
24	.01	400	016-5	TP421	S-4-01	TC-11	484-01	DT4S1	RF Bypass Pwr. Supply
25	.05	200	015-8	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
26	.01	200	015-5	TP421	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Isolation
27	.005	600	017-4	TP408	S-6-005	TC-25	684-005	DT6D5	Audio Coupling
28	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Fil. Bypass
29	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	" "
30	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	" "
31	6000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	" "
32	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	" "
33	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	" "
34	220	500	6-151	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	RF Bypass Pwr. Supply
35	220	500	6-151	MC240	MO 5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass
36	100	500	6-232	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter
37	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	Limiter Screen Bypass
38	100	500	6-232	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Limiter Grid Filter
39	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	2nd IF Screen Bypass
40	220	500	6-151	MC240	MO.5-325	1FM-325	1468-0005	5W5T25	Diode RF Filter
41	5000		6-259	MC465	MW.5-25	1FM-25	1467-005	1D5D5	1st IF Screen Bypass
42	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Fixed Pad.
43	47	500	6-159	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid
44	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	Conv. Screen Bypass
45	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Coupling
46	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	RF Screen Bypass
47	47	500	6-159	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Cathode Bypass
48	100	500	6-232	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	FM Dipole Coupling
49	100	500	6-232	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" " "
50	1000	300	6-230	MC255	MO.3-21	1FM-21	1468-001	1W5D1	De-emphasis

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
51	500K-2 Meg.	½					Volume Control, tone control off-on switch. Dual unit with switch operated by concentric shaft.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES
52	68Ω	¼	01-37	BW-¼-68	Blue-Gray-Blk. RF Cathode
53	3300Ω	½	02-108	BTS-3300	Or.-Or.-Red RF Plate Load
54	10Ω	¼	01-3	BW-¼-10	Br.-Blk.-Blk. Parasitic Suppressor
55	22KΩ	¼	01-143	BTS-22K	Red-Red-Or. Oscillator Grid
56	2200Ω	¼	01-101	BTS-2200	Red-Red-Red Converter Screen Dropping
57	470KΩ	¼	01-199	BTS-470K	Yl.-Vi.-Yl. AVC Network
58	47KΩ	¼	01-157	BTS-47K	Yl.-Vi.-Or. Conv. Grid
59	470KΩ	¼	01-199	BTS-470K	Yl.-Vi.-Yl. AVC Network
60	22KΩ	¼	01-143	BTS-22K	Red-Red-Or. Diode RF Filter
61	470KΩ	¼	01-199	BTS-470K	Yl.-Vi.-Yl. Diode Load
62	2.2 Meg.	¼	01-227	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
63	68Ω	¼	01-37	BW-¼-68	Blue-Gray-Blk. 2nd IF Cathode
64	47KΩ	¼	01-157	BTS-47K	Yl.-Vi.-Or. Limiter Grid
65	3300Ω	½	02-108	BTS-3300	Or.-Or.-Red Limiter Screen Bleeder
66	12KΩ	½	02-132	BTS-12K	Br.-Red-Or. Limiter Screen Dropping
67	470KΩ	¼	01-199	BTS-470K	Yl.-Vi.-Yl. Series Test Jack
68	47KΩ	¼	01-157	BTS-47K	Yl.-Vi.-Or. Limiter Plate Decoupling
69	470KΩ	¼	01-199	BTS-470K	Yl.-Vi.-Yl. AF Plate Load
70	10 Meg.	¼	01-255	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
71	12KΩ	¼	01-132	BTS-12K	Br.-Red-Or. Tone Compensation
72	470KΩ	¼	01-199	BTS-470K	Yl.-Vi.-Yl. Output Grid
73	150Ω	½	02-52	BW-½-150	Br.-Grn.-Br. Output Cathode
74	220Ω	½	02-59	BW-½-220	Red-Red-Br. Filter
75	22Ω	1		BW-1-22	Red-Red-Blk. Surge Limiter
76A	50Ω		9-332	AB-50	Line Dropping
B	50Ω			AB-50	Pilot Light Shunt
77	47KΩ	¼	01-157	BTS-47K	Yl.-Vi.-Or. De-emphasis

FILTER CHOKE

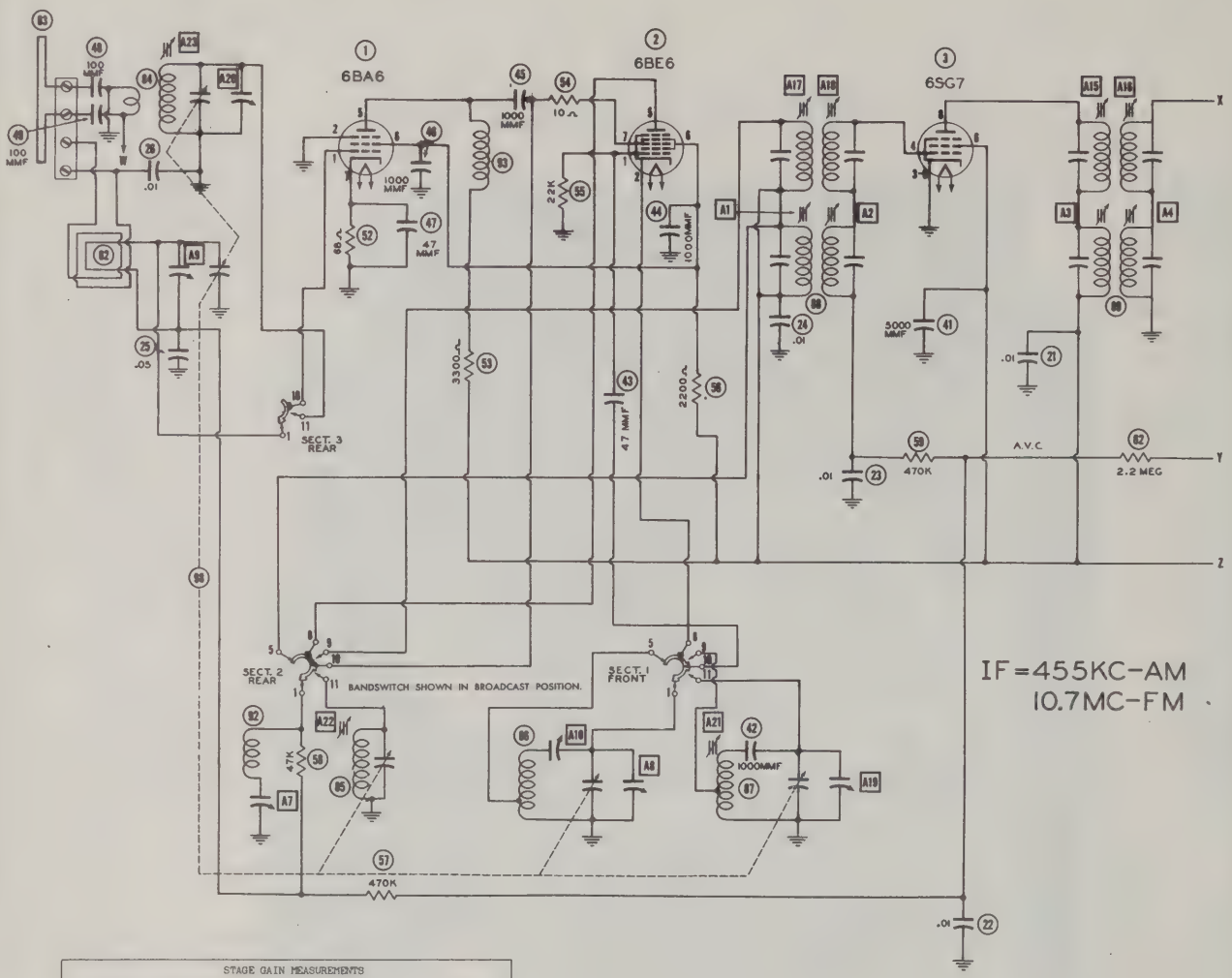
ITEM NO.	RATINGS: TOTAL DIRECT CURRENT	RATINGS: D. C. RESISTANCE	RATINGS: INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA: MAJESTIC PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	INSTALLATION NOTES
78	.058A	100Ω	3.4 Henries	2-32	C-1080	T20C53*	C-2977	*Drill one new mounting hole.

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	STANCOR PART No.	THORDAR'N. PART No.	MERIT PART No.	INSTALLATION NOTES
79	2100Ω	3.2Ω	220Ω	.6Ω	Part of 22-42	A-3876	T22S45	A-2928	

PARTS LIST CONTINUED ON LAST PAGE

A13
A16
A15
A17
A14
A12
A11
A18



STAGE GAIN MEASUREMENTS			
ANT. TO RF GRID	8X		600KC
RF GRID TO CONV. GRID	5X		600KC
CONV. GAIN	10X	IN	600KC
		OUT	455KC
1st IF TRANS.	.5X		455KC
1st IF TUBE	30X		455KC
2nd IF TRANS.	.45X		455KC
2nd IF TUBE	100X		455KC
3rd IF TRANS.	.6X		455KC
AUDIO	35X		400∿
OUTPUT	18X		400∿

VOLTAGE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	-.2VDC	0V.	24VAC	30VAC	85VDC	85VDC	.8VDC	-
2	6BE6	-7VDC§	0V.	36VAC	30VAC	105VDC	85VDC	-.2VDC	-
3	6BG7	0V.	18VAC	0V.	-.6VDC	0V.	105VDC	24VAC	105VDC
4	6BQ7	0V.	12VAC	.7VDC	0V.	.7VDC	105VDC	18VAC	105VDC
5	6BH7	0V.	6VAC	0V.	-.4VDC	0V.	22VDC	12VAC	85VDC
6	6B8GT	-.4VDC	0V.	-.4VDC	-.5VDC	-.1VDC	53VDC	0V.	6VAC
7	25L6GT	0V.	60VAC	100VDC	105VDC	0V.	105VDC	36VAC	7.2VDC
8	25Z6GT	100VDC	60VAC	117VAC	105VDC	117VAC	110VDC	85VAC	115VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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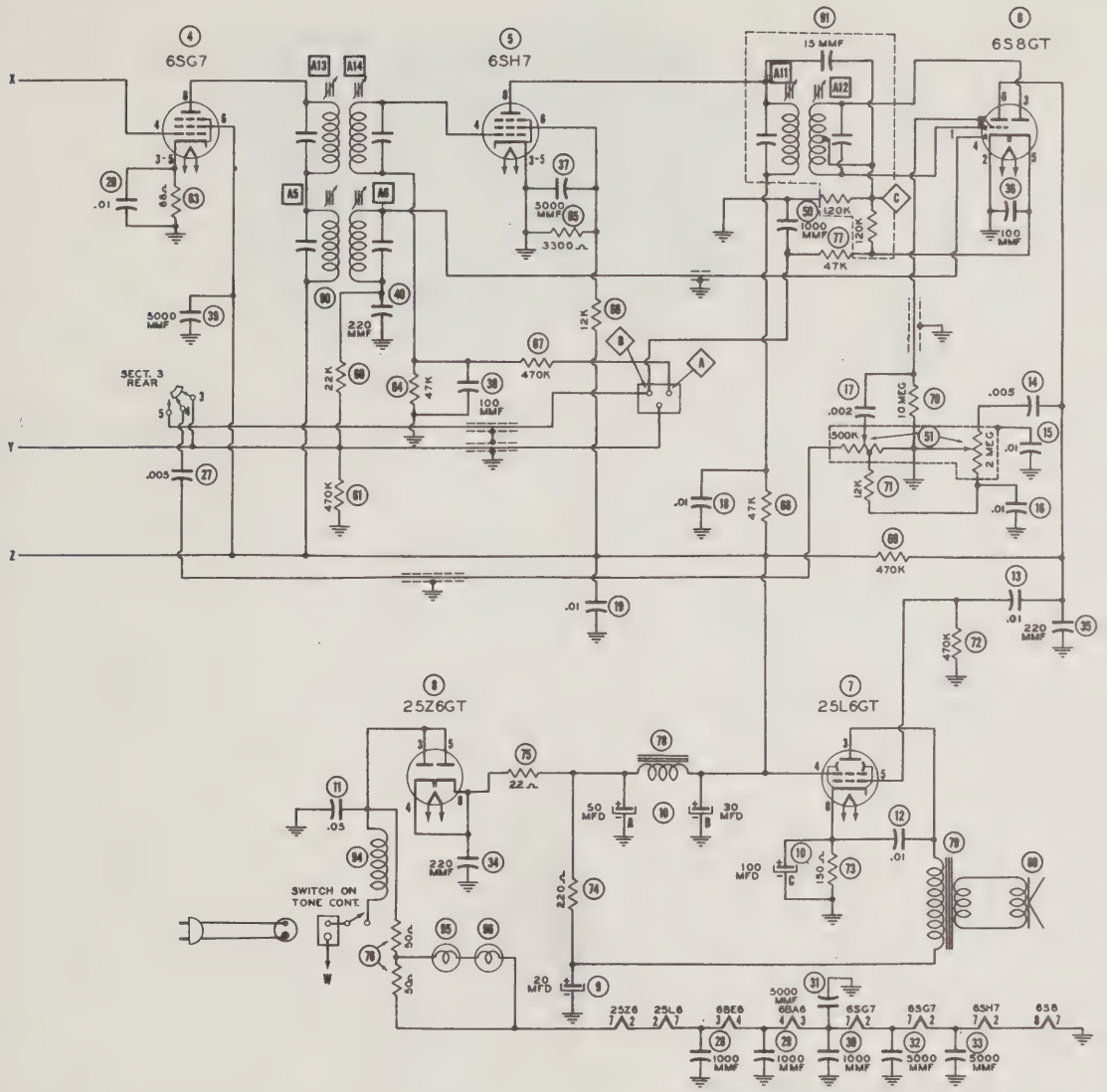
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

4720-15

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6BA6	4 Meg.	0Ω	14Ω	18Ω	19KΩ	18KΩ	68Ω	-
2	6BE6	22KΩ	.6Ω	22Ω	18Ω	16KΩ	18KΩ	4 Meg.	-
3	6B07	0Ω	11Ω	0Ω	4 Meg.	0Ω	16KΩ	14Ω	16KΩ
4	6SG7	0Ω	6Ω	65Ω	6.5Ω	65Ω	16KΩ	11Ω	16KΩ
5	6SH7	0Ω	3Ω	0Ω	47KΩ	0Ω	3.3KΩ	6Ω	62KΩ
6	6S80T	120KΩ	0Ω	120KΩ	480KΩ	270KΩ	490KΩ	0Ω	3Ω
7	25L60T	0Ω	31Ω	16KΩ	16KΩ	500KΩ	16KΩ	22Ω	150Ω
8	25Z60T	16KΩ	31Ω	115Ω	16KΩ	115Ω	16KΩ	41Ω	16KΩ

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

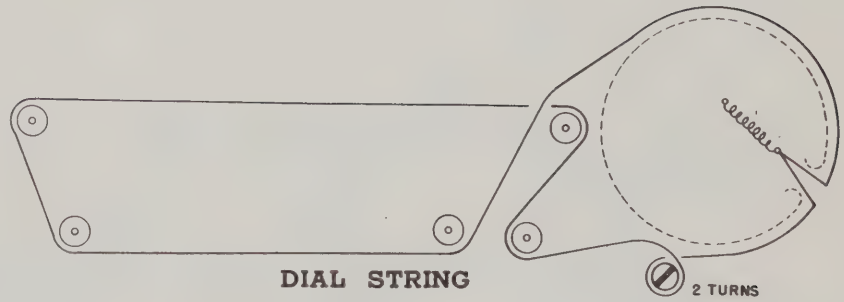
4720-15

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-115		
80	PM	3.2Ω	22-42	Mod. P8-V		
	CONE DIA.	VC DIA.				
81	7-3/8"	1/2"	CONE HAS SPECIAL ADJUSTMENT FEATURE-ORDER FROM MANUFACTURER			



R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: MEISSNER PART No.	
82	Loop Ant.	.2Ω	1.2Ω	S-1400		
83	FM Ant.					
84	FM Ant.Coil	0Ω	0Ω	S-1407		
85	FM RF Coil		0Ω	S-1408		
86	AM Osc.Coil		5Ω	S-1411	14-1040	
87	FM Osc.Coil		0Ω	S-1409		
88A	AM Input IF	6.5Ω	6.5Ω	S-1389		Items 88A & 88B in same can.
B	FM 1st IF	.2Ω	.2Ω			
89A	AM Inter IF	6.5Ω	6.5Ω	S-1390		Items 89A & 89B in same can.
B	FM 2nd IF	.2Ω	.2Ω			
90A	AM Output IF	6.5Ω	6.5Ω	S-1391		Items 90A & 90B in same can.
B	FM 3rd IF	.2Ω	.2Ω			
91	Disc. Trans.	.2Ω	.2Ω	S-1392		
92	Wave Trap		21Ω	S-1410		
93	RF Choke		.2Ω	S-1384		
94	RF Choke		.1Ω	S-1385		

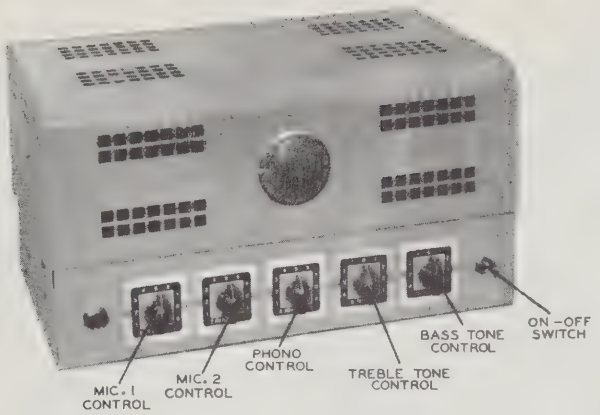
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA	INSTALLATION NOTES
95	Bayonet	6-8	0.15	Brown	26-2		Type 47
96	"	"	"	"	26-2		

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
97	Band Switch	11-71	Shaft
		11-71-1	Wafer Sect. 1
		11-71-2	" " 2
		11-71-3	" " 3
98	Tuning Cap.	7-25	AM (17-500MMF, 17-500MMF)
A7	Trimmer	8-63	Wave Trap Adj.
	"	8-35	A8, A20
A9	"	8-59	RC Ant. Adj.
A10	Padder	8-65	RC Osc. Adj.
A19	Trimmer	8-38	FM Ant. Adj.
	Dial Pointer	135-21	
	Dial Scale	117-81	

DATE 12/47 SET #30 FOLDER #4720-15



TRADE NAME	Masco, Model MA-50
MANUFACTURER	Mark Simpson Mfg. Co., Inc., 32-28 49th St., Long Island City 3, N.Y.
TYPE SET	AC Operated 3 Channel 10 Tube Amplifier
TUBES (TEN)	Types, (2) 7C7 Mic. Amp., 7F7 AF-Amp., 7N7 AF Amp. Phase Inv., (4) 6L6GA Power Output, (2) 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC RATING 1.8 Amp. @ 117V AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7C7	24VDC*	20VDC	34VDC	0V.	0V.	-.5VDC	0V.	24VDC*
2	7C7	24VDC*	20VDC	32VDC	0V.	0V.	-.55VDC	0V.	24VDC*
3	7F7	24VDC*	2.3VDC	200VDC	0V.	0V.	200VDC	2.3VDC	24VDC*
4	7N7	24VDC*	5VDC	125VDC	0V.	0V.	135VDC	5VDC	24VDC*
5	6L6GA	0V.	24VDC*	410VDC	310VDC	0V.	125VDC	24VDC*	24VDC
6	6L6GA	0V.	24VDC*	410VDC	310VDC	0V.	0V.	24VDC*	24VDC
7	6L6GA	0V.	24VDC*	410VDC	310VDC	0V.	0V.	24VDC*	24VDC
8	6L6GA	0V.	24VDC*	410VDC	310VDC	0V.	0V.	24VDC*	24VDC
9	5U4G	0V.	420VDC	0V.	350VAC	0V.	350VAC	0V.	420VDC
10	5U4G	0V.	420VDC	0V.	350VAC	0V.	350VAC	0V.	420VDC

*6.2V AC BETWEEN FILAMENT PINS.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7C7	100Ω	420KΩ	1.1 Meg.	0Ω	0Ω	15 Meg.	0Ω	100Ω
2	7C7	100Ω	420KΩ	1.1 Meg.	0Ω	0Ω	15 Meg.	0Ω	100Ω
3	7F7	100Ω	1KΩ	160KΩ	250KΩ	0Ω.	160KΩ	1KΩ	100Ω
4	7N7	100Ω	920Ω	160KΩ	11KΩ	25KΩ	160KΩ	920Ω	100Ω
5	6L6GA	INF.	100Ω	100KΩ	100KΩ	110KΩ	160KΩ	100Ω	100Ω
6	6L6GA	INF.	100Ω	100KΩ	100KΩ	110KΩ	INF.	100Ω	100Ω
7	6L6GA	INF.	100Ω	100KΩ	100KΩ	100KΩ	INF.	100Ω	100Ω
8	6L6GA	INF.	100Ω	100KΩ	100KΩ	100KΩ	INF.	100Ω	100Ω
9	5U4G	INF.	100KΩ	INF.	30Ω	INF.	30Ω	INF.	100KΩ
10	5U4G	INF.	100KΩ	INF.	30Ω	INF.	30Ω	INF.	100KΩ

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Set volume controls at minimum and connect proper output load.

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DATE 12/47 SET #30 FOLDER #4720-16

PARTS LIST AND DESCRIPTIONS

MASCO MODEL MA-50

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Mic. Amp.	7C7	7C7	8V	
2	Mic. Amp.	7C7	7C7	8V	
3	AF-Amp.	7F7	7F7	8AC	
4	AF Amp.-Phase Inv.	7N7	7N7	8AC	
5	Power Output	6L6GA	6L6GA	7AC	
6	" "	6L6GA	6L6GA	7AC	
7	" "	6L6GA	6L6GA	7AC	
8	" "	6L6GA	6L6GA	7AC	
9	Rectifier	5U4G	5U4G	5T	
10	"	5U4G	5U4G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
11	8	600		HS693	D-8-600	AP-86	GL600-8	KR608	Filter
12	8	600		HS693	D-8-600	AP-86	GL600-8	KR608	"
13	8	600		HS693	D-8-600	AP-86	GL600-8	KR608	"
14	8	450		TC71	M-8-450	UT-8	PRS450-8	BR845	"
15A	8	450		2N518	M-2x8-450	UT-88	PRS450-8-8	BRL8845	" Red
B	8	450							" "
16	10	50		TC32	M-10-50	TA-510	PRS50-10	BR105	Cathode Bypass
17	10	50		TC32	M-10-50	TA-510	PRS50-10	BR105	" "
18	.1	600		TP418	MPW-6-1	TC-1	684-.1	DT6P1	Line Filter
19	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	Audio Coupling
20	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	" "
21	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
22	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	Audio Coupling
23	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" "
24	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" "
25	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	Screen Bypass
26	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	" "
27	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Mic. Coupling
28	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	" "
29	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Compensation
30	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	" "

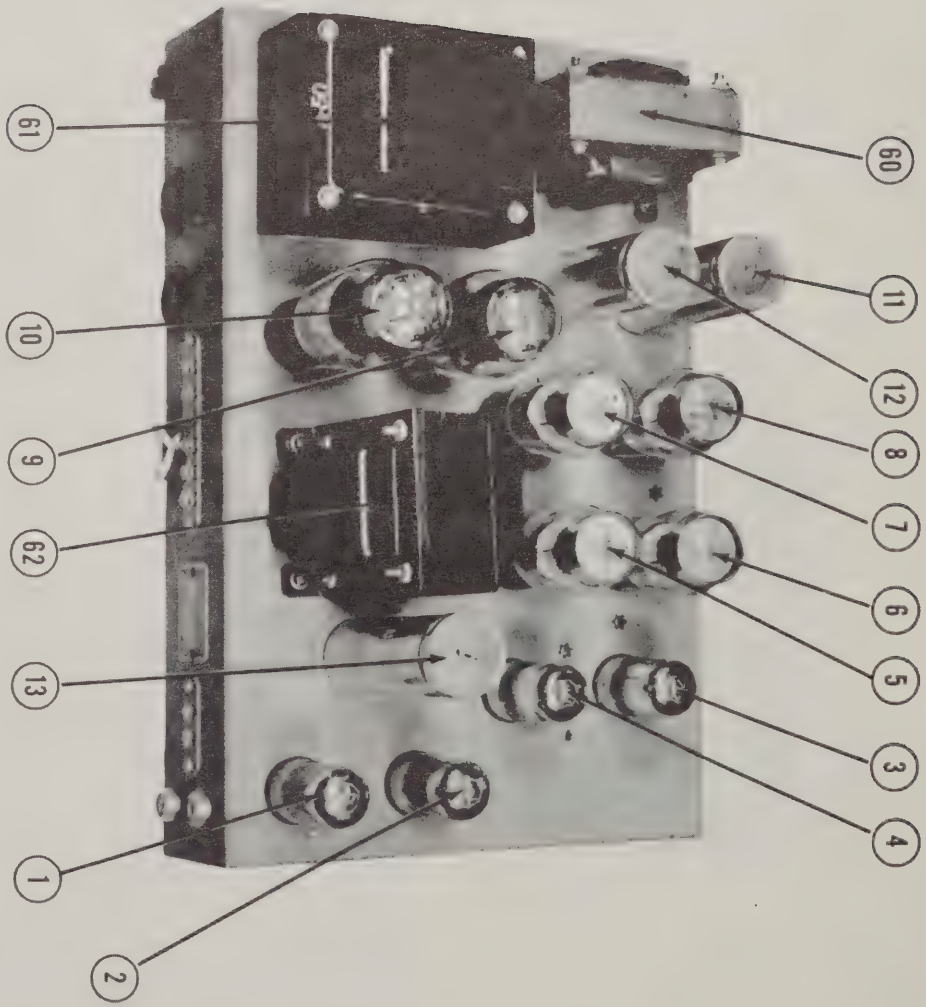
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
31A	500KΩ	½		MR48	D13-133	M-60-Z	1st Mic. Amp. Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 31A per instructions
32A	500KΩ	½		MR48	D13-133	M-60-Z	1st Mic. Amp. Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 32A per instructions
33A	500KΩ	½		MR48	D13-133	M-60-Z	Phono Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach 33A per instructions
34A	500KΩ	½		MR48	D13-133	M-60-Z	Treble Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 34A per instructions
35A	500KΩ	½		MR48	D13-133	M-60-Z	Bass Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 35A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
36	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 1st Mic. Amp. Grid
37	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue 2nd Mic. Amp. Grid
38	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 1st Mic. Amp. Screen Dropping
39	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. 2nd Mic. Amp. Screen Dropping
40	270KΩ	½		BTS-270K	Red-Vi.-Yl. 1st Mic. Amp. Plate Load
41	270KΩ	½		BTS-270K	Red-Vi.-Yl. 2nd Mic. Amp.
42	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Voltage Dropping
43	1000Ω	½		BTS-1000	Br.-Blk.-Red AF Cathode

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MASCO PART No.	IRC PART No.	
44	47KΩ	½		BTS-47K	Yl.-Vl.-Or. AF Plate Load
45	12KΩ	½		BTS-12K	Br.-Red-Or. Filter
46	270KΩ	½		BTS-270K	Red-Vl.-Yl. Tone Compensation
47	25KΩ	½		BTS-27K	Red-Grn.-Or. AF Grid
48	1000Ω	½		BTS-1000	Br.-Blk.-Red AF-Phase Inverter Cathode
49	3 Meg.	½		BTS-3.3 Meg.	Or.-Blk.-Grn. Feedback
50	47KΩ	½		BTS-47K	Yl.-Vl.-Or. AF Plate Load
51	47KΩ	½		BTS-47K	Yl.-Vl.-Or. Phase Inverter Plate Load
52	10KΩ	½		BTS-10K	Br.-Blk.-Or. Phase Inverter Grid
53	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Output Grid
54	100KΩ	½		BTS-100K	Br.-Blk.-Yl. " "
55	150Ω	½		BW-½-150	Br.-Grn.-Br. Parasitic Suppressor
56	150Ω	½		BW-½-150	Br.-Grn.-Br. "
57	100Ω	20		DG-100	Output Cathode-See Note
58	12KΩ	½		BTS-12K	Br.-Red-Or. Voltage Dropping
59	5000Ω	10		AB-5000	Filter

Note-Some models use 2-200Ω 10W resistor in parallel.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MASCO PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
60	.235A	68Ω	6 Henries	C-575	C-1703*	T20C56*	*C-3196*	

*Drill new mounting holes.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
61	117V AC @ 1.8A	700V CT @ .235A	4.8V AC @ 6.0A	6.2V AC @ 5.0A	A-50		T22R34*	

*Drill new mounting holes.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
62	4400Ω CT	2Ω 4Ω 8Ω 15Ω 500Ω	85Ω CT	.2Ω .25Ω .4Ω .5Ω 16Ω	0-50	A-3802*	T22S78		*Drill new mounting holes.

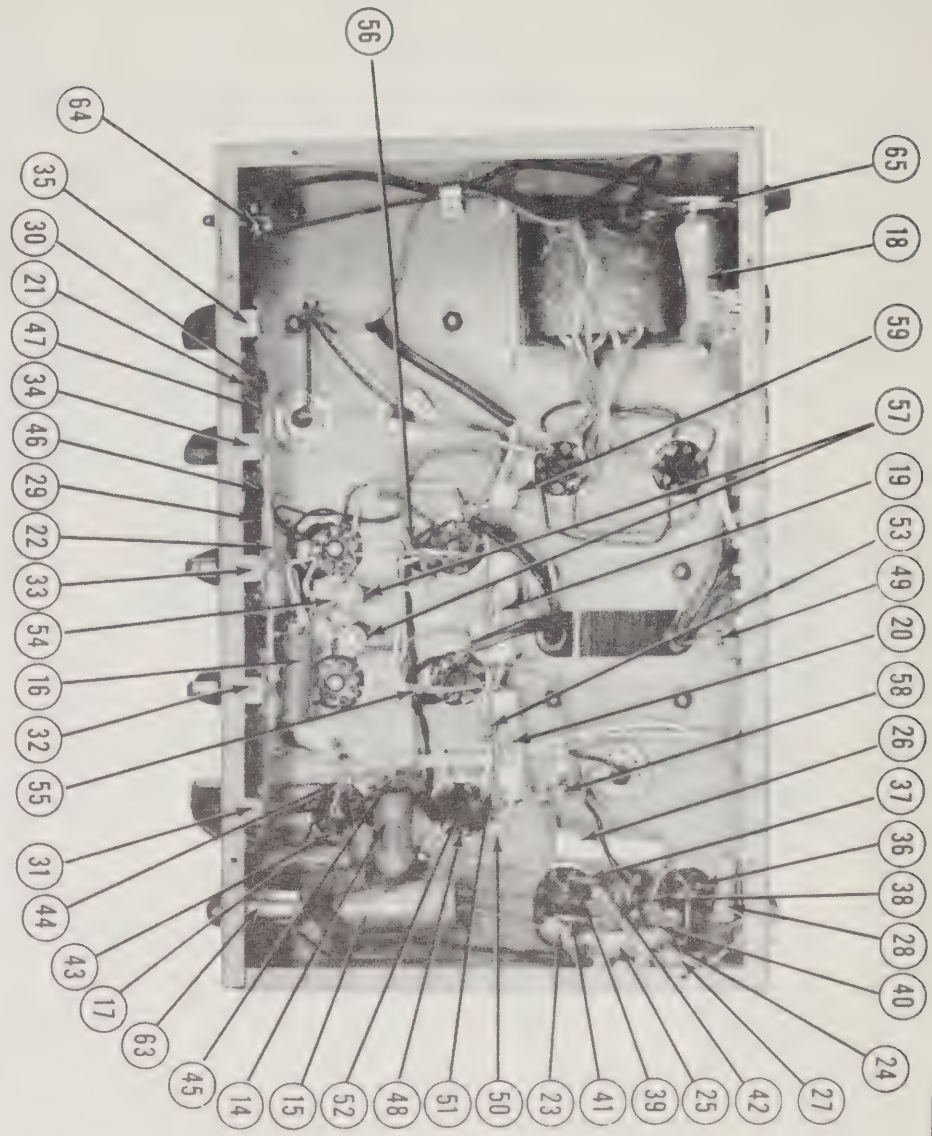
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
63	Bayonet	6-8	0.15	Brown			Type 47

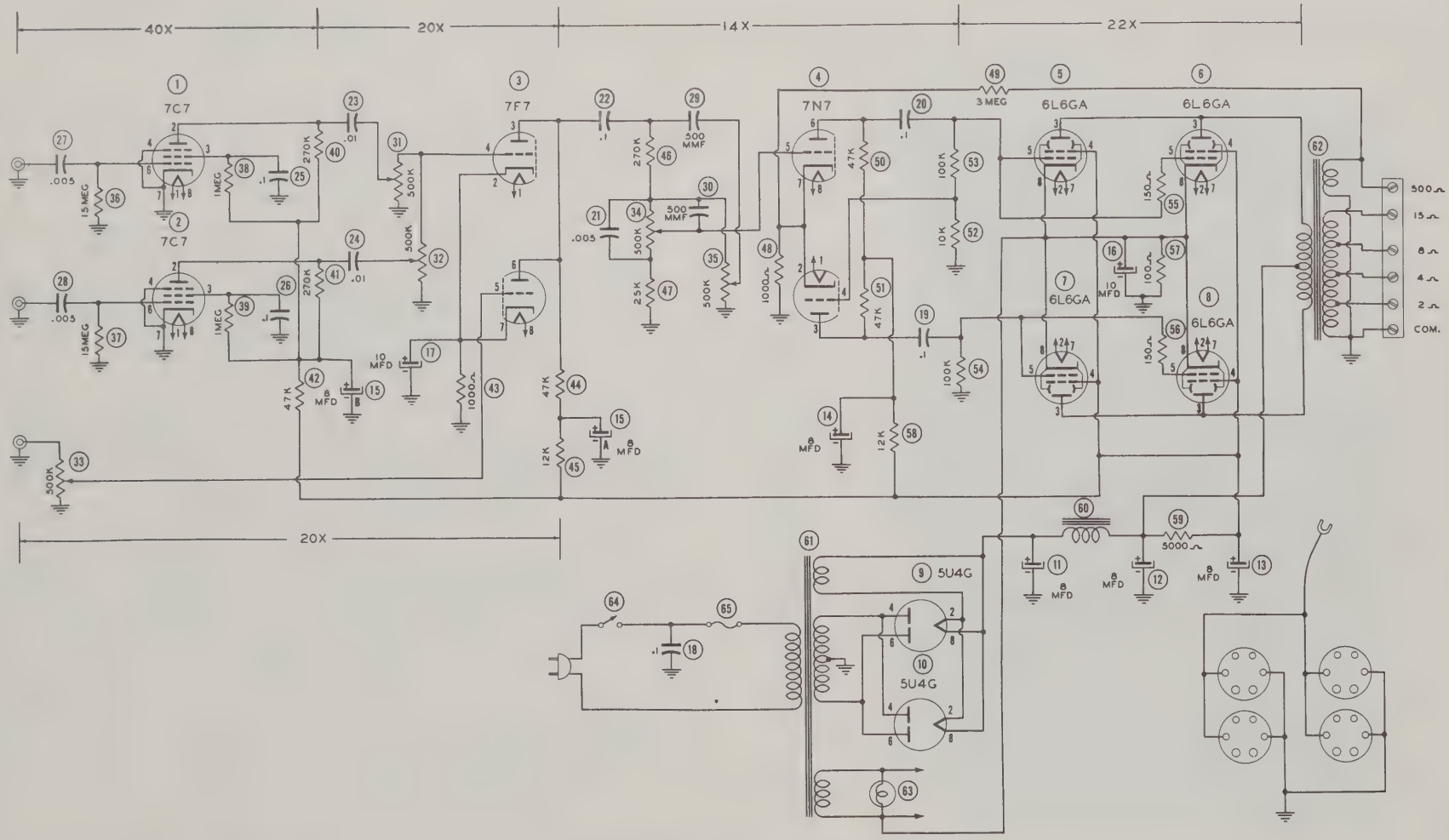
MISCELLANEOUS

ITEM No.	PART NAME	MASCO PART No.	NOTES
64	Switch		On-Off
65	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW



MASCO MODEL MA-50



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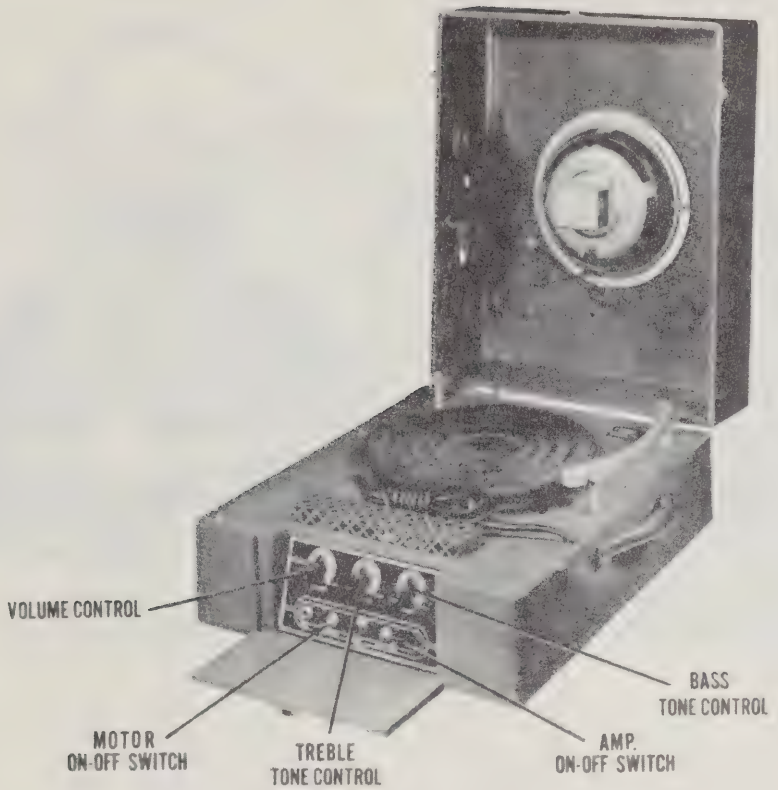
4720-16

MASCO MODEL
TP-16A



MASCO MODEL TP-16A

TRADE NAME	Masco, Model TP-16A
MANUFACTURER	Mark Simpson Mfg.Co.,Inc., 32-28 49th St., Long Island City, 3, N.Y.
TYPE SET	AC Operated Phono with 4 Tube Amplifier
TUBES (FOUR)	Types, 6SL7GT AF Amp., 6SL7GT AF Amp., 6V6GT Power Output, 6X5GT Rectifier.
POWER SUPPLY	110-120 Volts AC RATING .370 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SL7GT	0V.	130VDC	2VDC	0V.	70VDC	0V.	3.3VAC	3.3VAC
2	6SL7GT	0V.	100VDC	1VDC	0V.	100VDC	1VDC	3.3VAC	3.3VAC
3	6V6GT	0V.	3.3VAC	235VDC	255VDC	-10VDC	-13VDC	3.3VAC	0V.
4	6Y5GT	0V.	3.3VAC	240VAC	-15VDC	240VAC	0V.	3.3VAC	255VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5 -	Pin 6	Pin 7	Pin 8
1	6SL7GT	0Ω	200KΩ	5KΩ	6 Meg.	250KΩ	0Ω	12Ω	12Ω
2	6SL7GT	270KΩ	160KΩ	1K2	25KΩ	160KΩ	1KΩ	12Ω	12Ω
3	6V6GT	0Ω	12Ω	80KΩ	80KΩ	500KΩ	250KΩ	12Ω	0Ω
4	6X5GT	INF.	12Ω	415Ω	260Ω	420Ω	0Ω	12Ω	80KΩ

NOTE-FILAMENT READINGS MAY VARY ACCORDING TO ADJUSTMENT OF HUM BALANCER.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Set all controls at minimum and connect proper output load.

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DATE 12/47 SET #30 FOLDER #4720-17

PARTS LIST AND DESCRIPTIONS

MASCO MODEL TP-15A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MASCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	AF Amp.	6SL7GT	6SL7GT	8BD	
2	" "	6SL7GT	6SL7GT	8BD	
3	Power Output	6V6GT	6V6GT	7AC	
4	Rectifier	6X5GT	6X5GT	6S	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MASCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5	16	450		TC75	M-16-450	UT-16	PRS450-16	BR1645	Filter
6	16	450		TC75	M-16-450	UT-16	PRS450-16	BR1645	"
7A	8	450		2N518	M-2x8-450	UT-88	PRSA450-8-8	EZ8845	" Red
B	8	450							" "
8	10	50		TC32	M-10-50	TA-510	PRS50-10	BR105	Bias Filter
9	10	50		TC32	M-10-50	TA-510	PRS50-10	BR105	Cathode Bypass
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
11	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Compensation
12	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
13	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" "
14	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	
15	.01	400		TP421	MPH-4-01	TC-11	484-01	DT4S1	Line Filter
16	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Tone Compensation
17	500	500		MC245	MO.5-35	1FM-35	1468-0005	5W5T5	" "

CONTROLS

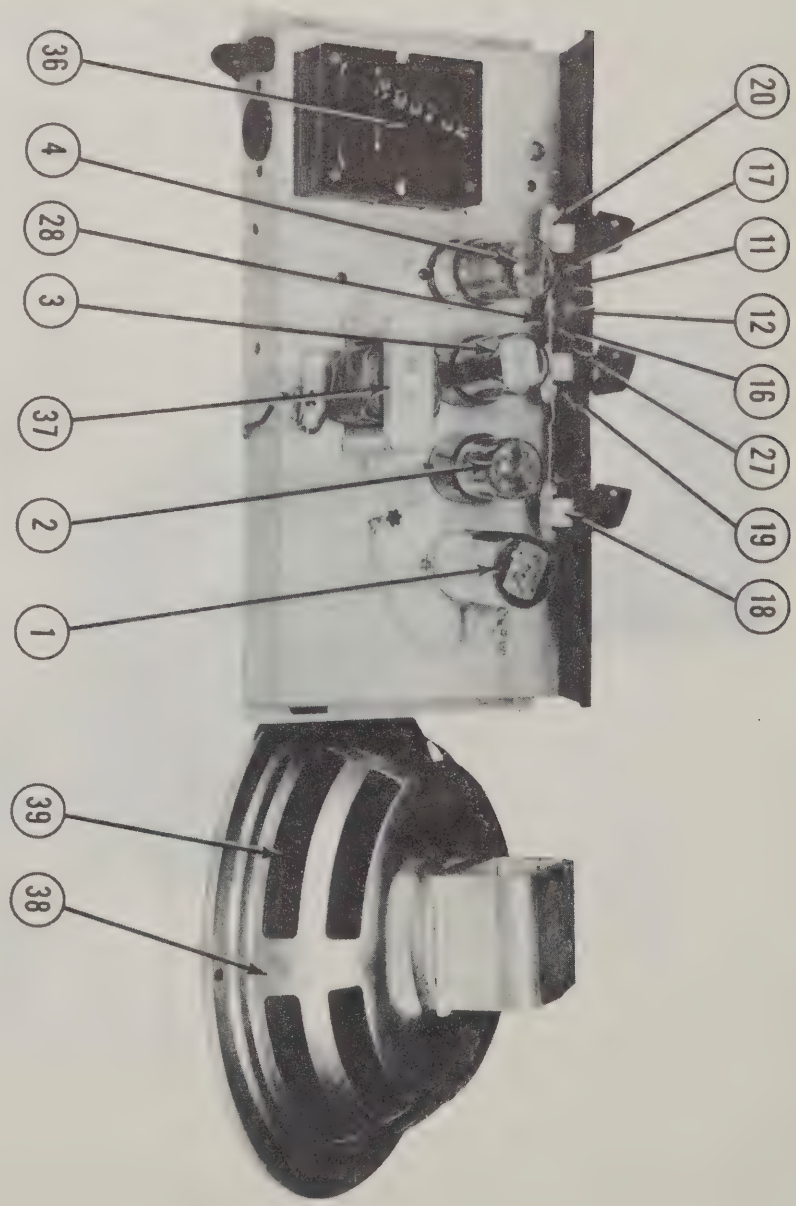
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
18A	500KΩ	½		MR48	D13-133	M-60-Z	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 18A per instructions
19A	500KΩ	½		MR48	D13-133	M-60-Z	Treble Control
B	Shaft			Not Req.	A	Not Req.	Attach to 19A per instructions
20A	500KΩ	½		MR48	D13-133	M-60-Z	Bass Control
B	Shaft			Not Req.	A	Not Req.	Attach to 20A per instructions
21	50Ω	1		C50P	W-50#	43-200#	Hum Balance

#Ground center terminal.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MASCO PART No.	IRC PART No.	IDENTIFICATION CODES
22	5.6 Meg.	½		BTS-5.6 Meg.	Grn.-Blue-Grn. Mic. Amp. Grid
23	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mic. Amp. Plate Load
24	5000Ω	½		BTS-4700	Grn.-Blk.-Red 1st AF Cathode
25	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 1st AF Plate Load
26	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Decoupling
27	270KΩ	½		BTS-270K	Red-Vi.-Yl. Tone Compensation
28	27KΩ	½		BTS-27K	Red-Vi.-Or. " "
29	1000Ω	½		BTS-1000	Br.-Blk.-Red 2nd AF Cathode
30	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load
31	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Feedback
32	270KΩ	½		BTS-270K	Red-Vi.-Yl. Output Grid
33	27KΩ	½		BTS-27K	Red-Vi.-Or. Decoupling
34	270KΩ	½		BTS-270K	Red-Vi.-Yl. Bias Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ~)	MASCO PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
35	.06A	260Ω	2.2 Henries	C-165	C-1706*	T20C52*	C-2975*	*Drill one new mounting hole.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MASCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
36	117V AC @ .37A	480V CT @ .06A	6.5V AC @ 2.0A		A-6D	P-6119†	T22R02†	P-2951†

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MASCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
37	8400Ω	5.0Ω	440Ω	.45Ω	O-6S	A-3824	T22S88	A-2932‡	‡ Drill one new mounting hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MASCO PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-120		
38	PM	5.0Ω		Mod. P10-S		
	CONE DIA.	VC DIA.				
39	9-3/4"	1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MASCO PART No.		
40	Bayonet	6-8	0.15	Brown			Type 47

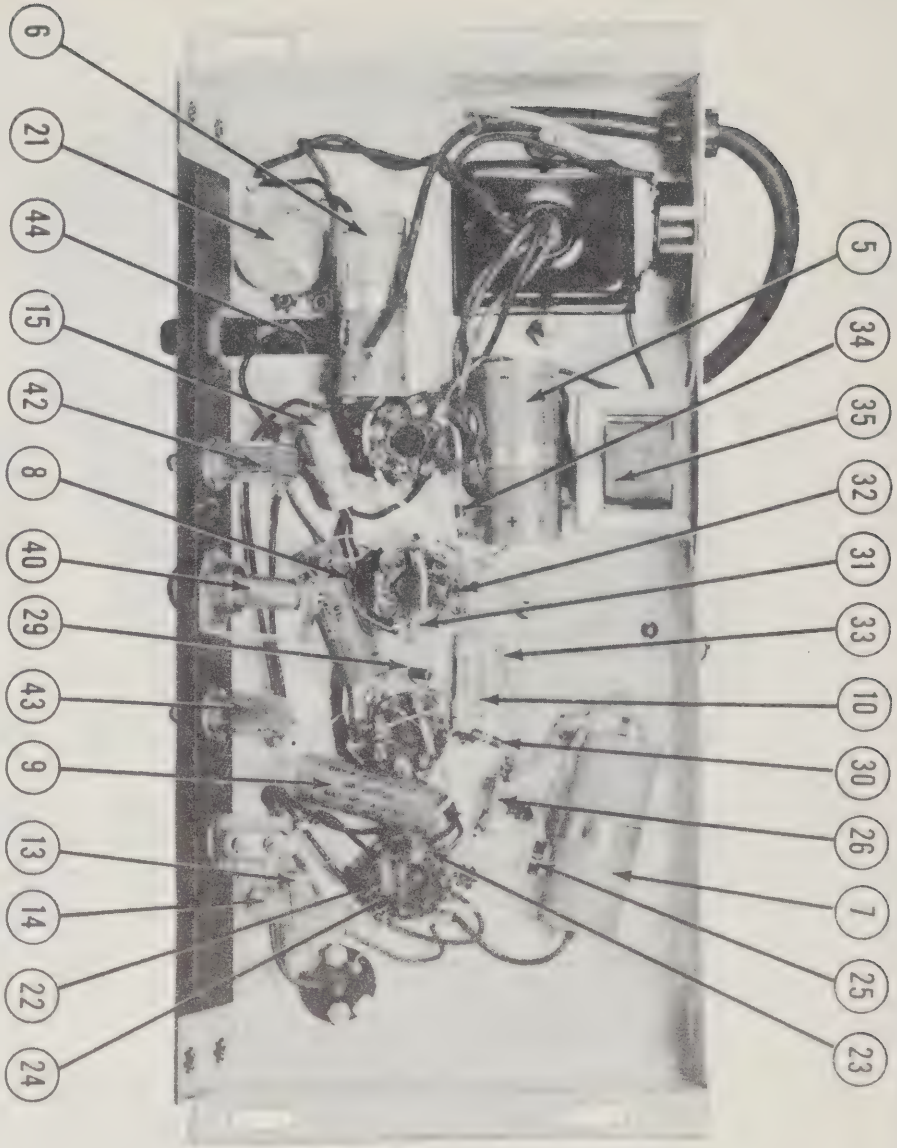
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA		REMARKS
	MASCO PART No.	ASTATIC PART No.	
41		WT-h	

MISCELLANEOUS

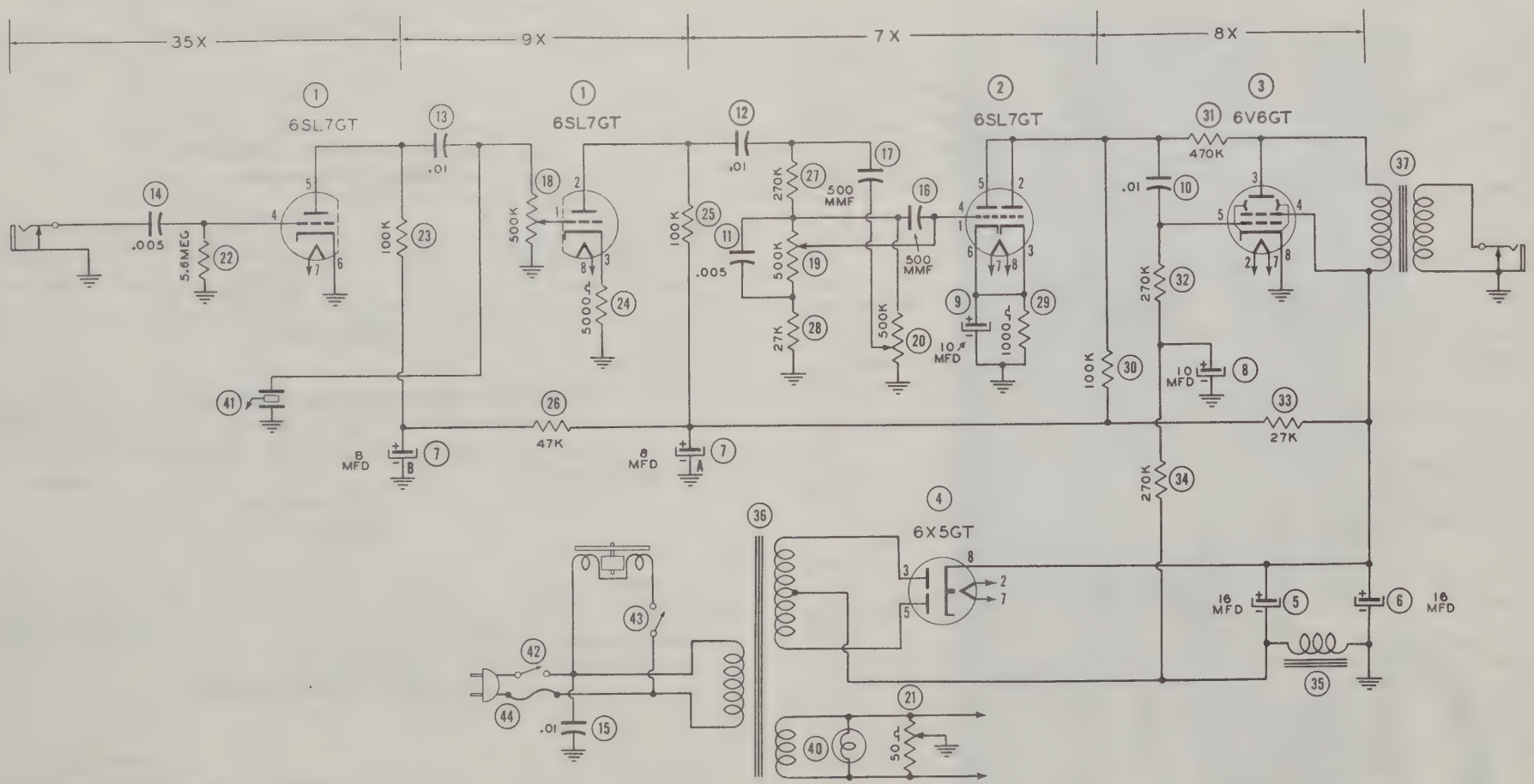
ITEM No.	PART NAME	MASCO PART No.	NOTES
42	Switch		On-Off (SPST)
43	Switch		Phono Motor (SPST)
44	Fuse		2 Amp.

CHASSIS—BOTTOM VIEW



MASCO MODEL TP-16A

DATE 12/47 SET #30 FOLDER #4720-17



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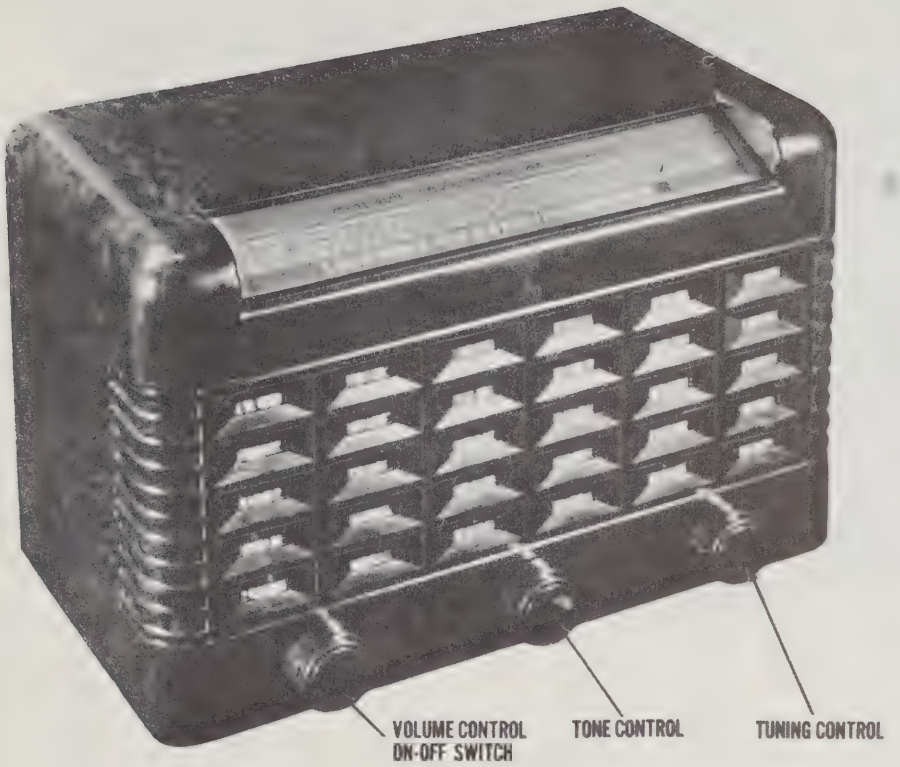
4720-17

MINERVA MODELS
702-H, 702H-1



MINERVA MODELS
702-H, 702H-1

MINERVA MODEL 702H

TRADE NAME	Minerva, Models 702H, 702H-1
MANUFACTURER	Minerva Corp. of America, 238 William St., New York, N.Y.
TYPE SET	AC-DC Operated Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 12SK7GT RF Amp., 12SA7 Converter, 12SK7GT RF Amp., 12SQ7GT Det.-AVC-AF, 35L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	540-1620KC RATING .230 Amp. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer 1-13/16" from left end of dial back plate. Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and chassis. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 8 (grid) of 12SK7. .Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to chassis.	1400KC	6-13/16" from left end of dial backplate.	"	A5	Adjust for maximum output.
3	200MMFD	"	"	Tune for maximum output.	"	A6	" " " "

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DATE 12/47 SET #30 FOLDER #4720-18

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		MINERVA PART No.	STANDARD REPLACEMENT		
1	RF Amp.		12SK7GT	8N	
2	Converter		12SA7	8R	
3	IF Amp.		12SK7GT	8N	
4	Det.-AVC-AF		12SQ7GT	8Q	
5	Power Output		35L6GT	7AC	
6	Rectifier		35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MINERVA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
7A	40	150		2N511	DSB-2x40-150	TA-440	PRSA150-40-40	BRD4415	Filter - Red
B	40	150							"
8	40	150		TC48	M-40-150	UT-401	PRS150-40	BR4015	"
9	.05	400		TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
10	.01	400		TP421	S-4-01	TC-11	494-01	DT4S1	Output Plate Bypass
11	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
12	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" "
13	.005	600		TP408	S-6-005	TC-25	684-005	DT6D5	Tone Comp. -See Note
14	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
15	.01	400		TP421	S-4-01	TC-11	494-01	DT4S1	Ext. Ant. Coupling
16	300	500		MC241	MO.5-33	1FM-33	1468-0003	5W5T3	AF Plate Bypass
17	300	500		MC241	MO.5-33	1FM-33	1468-0003	5W5T3	Diode RF Filter
18	300	500		MC241	MO.5-33	1FM-33	1468-0003	5W5T3	RF Coupling
41	10	50		MC215	MO.5-41	1FM-41	1468-00001	5W5Q1	Fixed Trimmer

Note-Not used in Model 702H-1.

CONTROLS

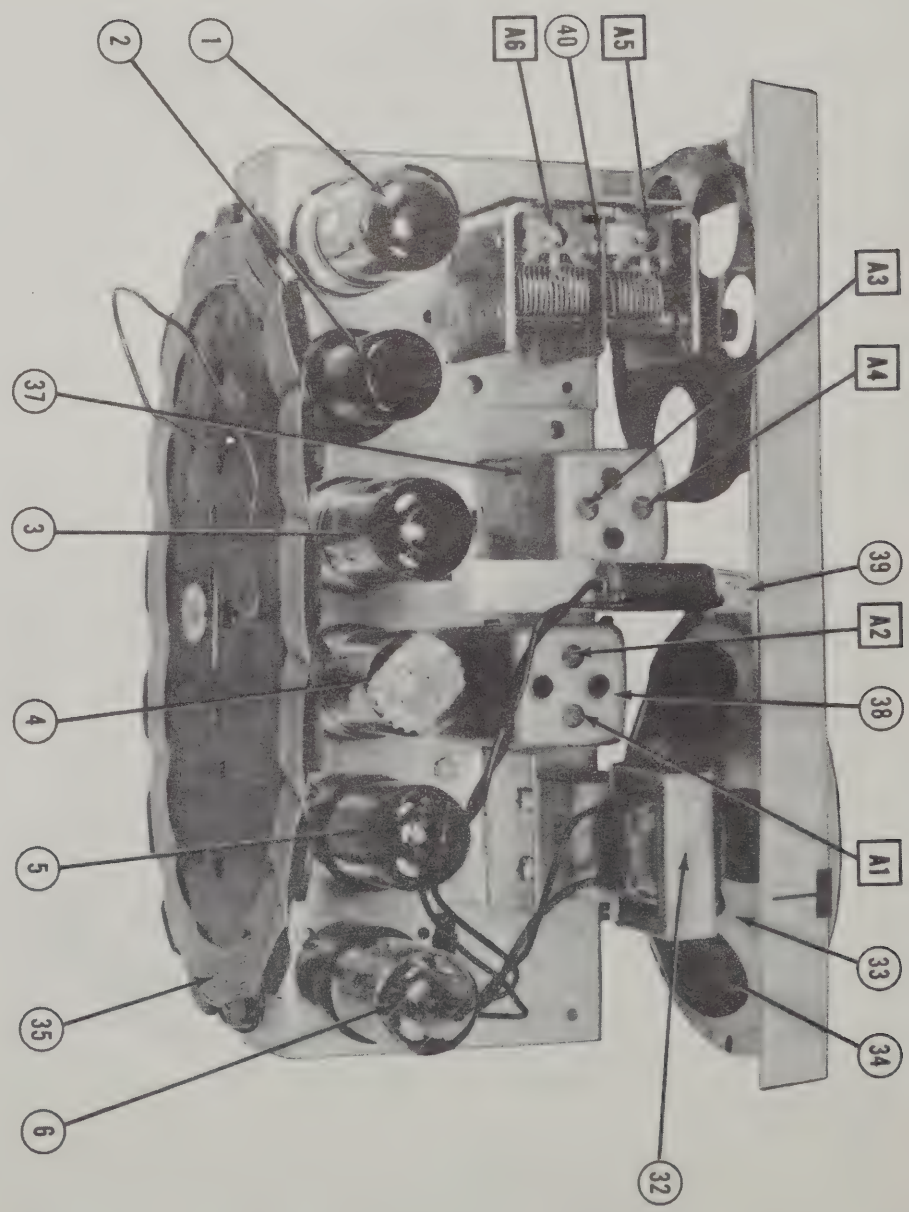
ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MINERVA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
19A	500KΩ	½		MR50	D11-133	M-58-S	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 19A per instructions
C	Switch			M26	41	SW-A	" " " "
20A	500KΩ	½	50-6	MR48	D13-133	M-60-Z	Tone Control - See Note
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 20A per instructions

Note-Not used in Model 702H-1.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MINERVA PART No.	IRC PART No.	
21	4700Ω	½		BTS-4700	Yl.-Vi.-Red RF Plate Load
22	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Converter Grid
23	470Ω	½		BTS-470	Yl.-Vi.-Br. Converter Cathode
24	20KΩ	½		BTS-22K	Red-Blk.-Or. Oscillator Grid
25	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
26	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
27	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Load
28	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
29	220Ω	½		BW-½-220	Red-Red-Br. Output Cathode
30	1000Ω	1		BTA-1000	Br.-Blk.-Red Filter
31	220Ω	2		BW-2-220	Red-Red-Br. "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MINERVA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
32	23002	3.52	1602	.42		A-3876*	T22845*	A-2928*	*Bend mounting tabs down, file out slots and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MINERVA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105†		†Drill and tap magnet frame.
33	PM	3.52	15-9	Mod. P5-X		
	CONE DIA.	VC DIA.				
34	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

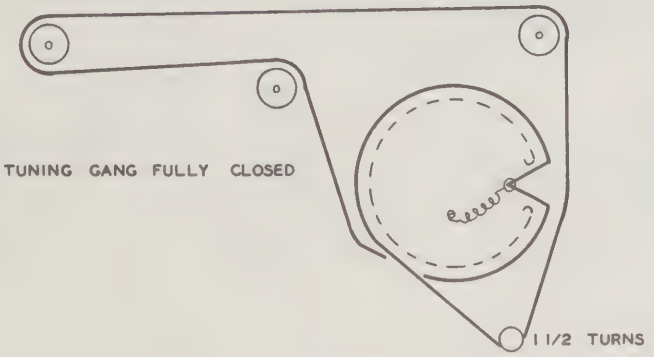
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MINERVA PART No.	MEISSNER PART No.	
35	Loop Ant.	.22	1.52			
36	Osc. Coil		42		14-1040	
37	Input IF	342	342		16-6658	
38	Output IF	342	342		16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MINERVA PART No.		
39	Bayonet	6-8	.15	Brown			Type 47

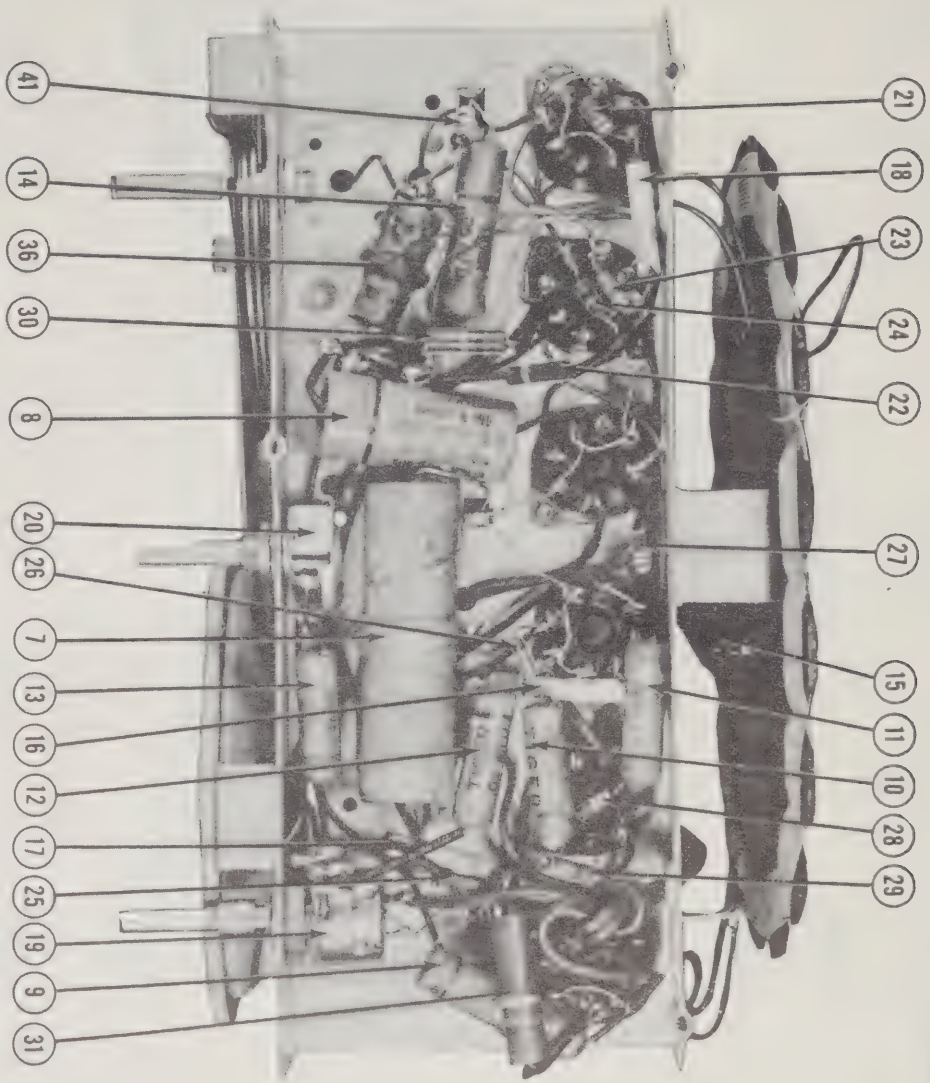
MISCELLANEOUS

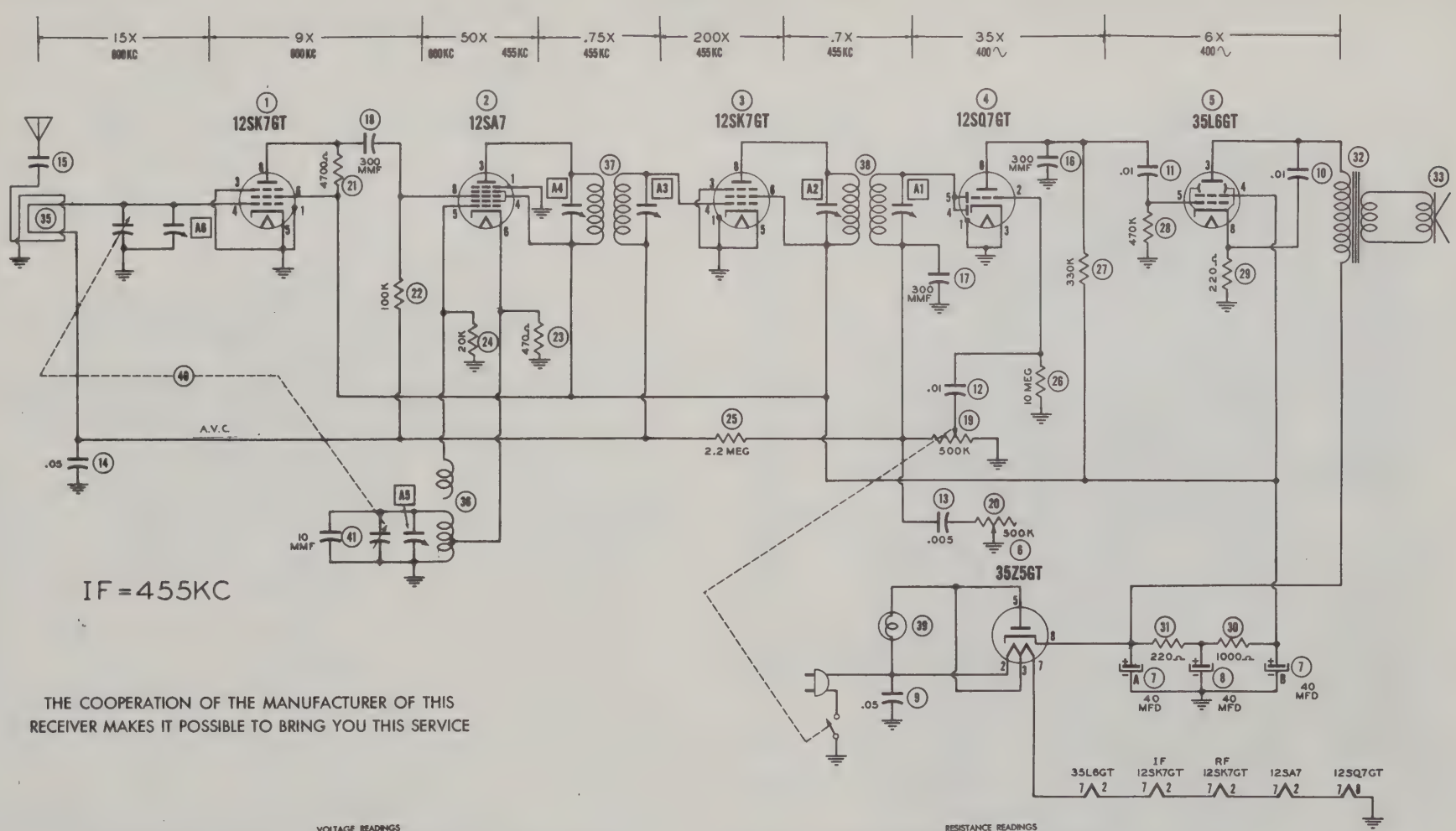
ITEM No.	PART NAME	MINERVA PART No.	NOTES
40	2 Gang Var.Cap.		(28-457 MMF, 18-180 MMF)



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





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VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0V.	24VAC	0V.	-.5VDC	0V.	83VDC	36VAC	50VDC
2	12SA7	0V.	12VAC	83VDC	83VDC	-6.4VDC§	0V.	24VAC	-.5VDC
3	12SK7GT	0V.	36VAC	0V.	-.5VDC	0V.	83VDC	48VAC	83VDC
4	12SQ7GT	0V.	-.8VDC	0V.	-.7VDC	-.7VDC	58VDC	12VAC	0V.
5	35L6GT	0V.	48VAC	117VDC	83VDC	0V.	0V.	85VAC	5.8VDC
6	35Z5GT	0V.	117VAC	112VAC	113VDC	112VAC	-.5VDC	85VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SK7GT	0Ω	24Ω	0Ω	2.5 Meg.	0Ω	70KΩ	34Ω	75KΩ
2	12SA7	0Ω	12Ω	70KΩ	70KΩ	20KΩ	.5Ω	24Ω	2.6 Meg.
3	12SK7GT	0Ω	34Ω	0Ω	2.5 Meg.	0Ω	70KΩ	46Ω	70KΩ
4	12SQ7GT	0Ω	10 Meg.	0Ω	500KΩ	500KΩ	400KΩ	12Ω	0Ω
5	35L6GT	0Ω	46Ω	70KΩ	70KΩ	480KΩ	INF.	78Ω	300Ω
6	35Z5GT	INF.	105Ω	102Ω	70KΩ	102Ω	2.5 Meg.	78Ω	70KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

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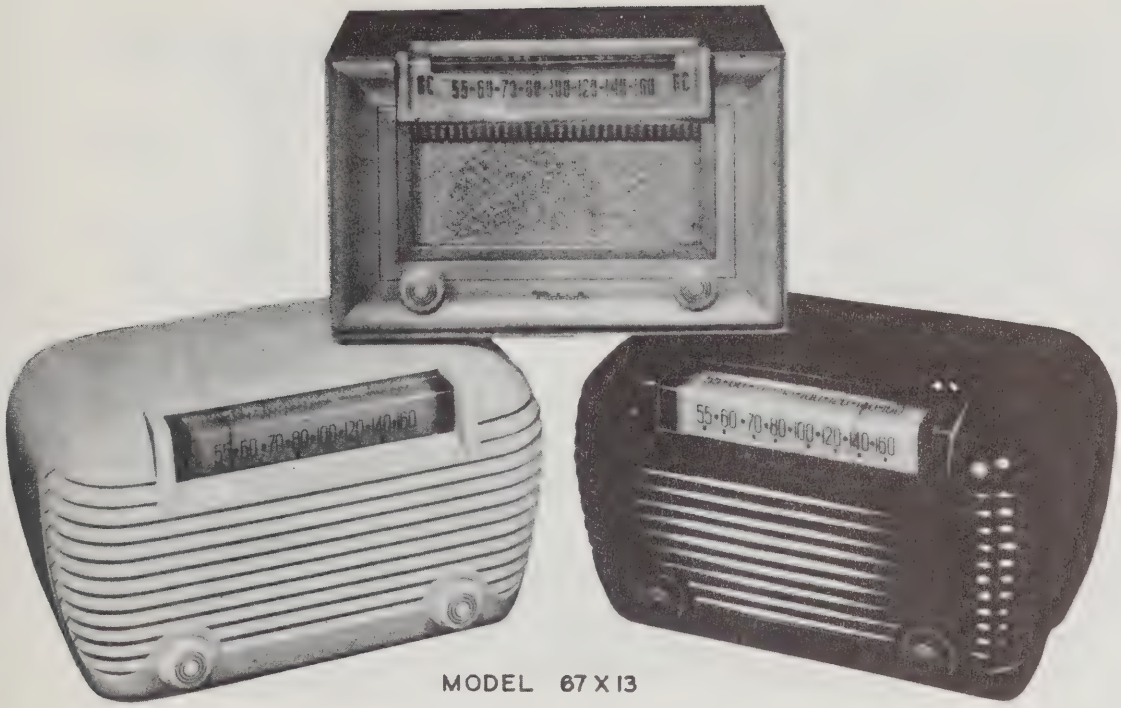
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-18

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of + 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

MOTOROLA MODELS 67X11, 67X12, 67X13 (Ch. HS-58)



MODEL 67X13

MODEL 67X12

MODEL 67X11

MOTOROLA MODELS 67X11, 67X12, 67X13 (Ch. HS-58)

TRADE NAME	Motorola, Models 67X11, 67X12, 67X13 (Ch. HS-58)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	AC DC Operated Superheterodyne with Loop Antenna
TUBES (SIX)	Types, 14C7 RF Amp., 14Q7 Converter, 14A7 IF Amp., 14B6 Det.-AVC-AF, 35A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	535-1620KC RATING .20 Amp. @ 117V AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to calibration mark per dial cord drawing.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	.1 MFD.	"	"	"	"	A5	Adjust for minimum output.
3	.1 MFD.	"	1620KC	"	"	A6	Adjust for maximum output.
4		Loop	1400KC	Tune for maximum output.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

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DATE 12/47 SET #30 FOLDER #4720-20

PARTS LIST AND DESCRIPTIONS

MOTOROLA MODELS 67X11, 67X12, 67X13 (Ch. HS-58)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	14C7	14C7	8V	
2	Converter	14Q7	14Q7	8AL	
3	IF Amp.	14A7	14A7	8V	
4	Det.-AVC-AF	14B6	14B6	8W	
5	Power Output	35A5	35A5	6AA	
6	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	40	150	23B75808	TN129	DSB-403020-150	TA-240	PRSA150-40-20	EZ42215	Filter - Red
B	20	150							" - Blue
C	20	150				UT-201	PRS150-20		" - Orange
8	.05	400	8S9816	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
9	.15	200	8A75566	TP417	S-4-2	TC-1	484-15	DT4P2	Line Isolation
10	.02	400	8S9802	TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
11	.25	200	8S9810	TP430	S-4-25	TC-2	484-25	DT4P25	Bias Filter
12	.01	400	8S9809	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
13	.01	400	8S9809	TP421	S-4-01	TC-11	484-01	DT4S1	" "
14	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
15	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
16	.05	400	8S9816	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
17	250	500	21R6648	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	AF Plate Bypass
18	250	500	21R6648	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter
19	250	500	21R6648	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	" " "
20	100	500	21R6641	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

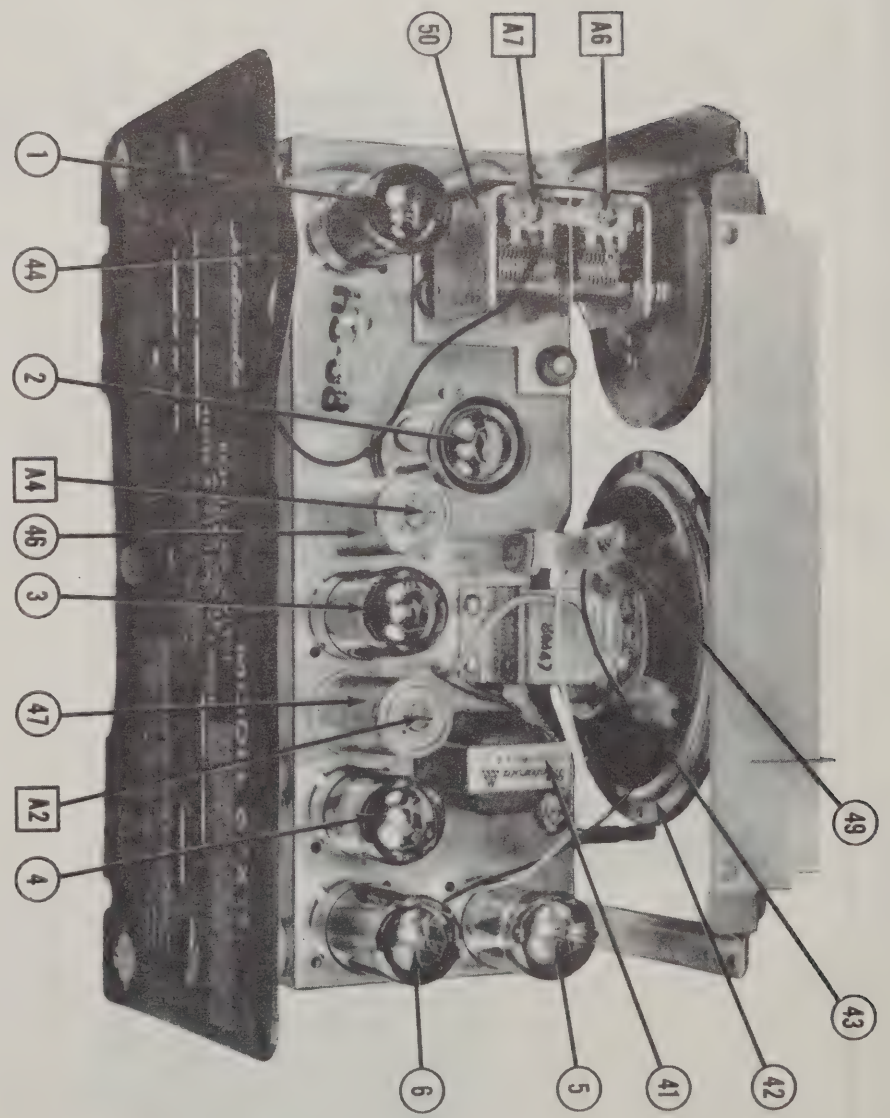
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	500KΩ	½	18A76191	TM226	D17-133X	AT-81	Volume Control tapped @ 25KΩ
B	Shaft		Not Req.	S825	E	KSS-3	Attach to 21A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
22	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
23	10KΩ	½	6R6054	BTS-10K	Br.-Blk.-Or. RF Plate Load
24	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Converter Grid
25	22KΩ	½	6R6028	BTS-22K	Red-Red-Or. Oscillator Grid
26	2.2 Meg.	½	6R3927	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
27	4.7 Meg.	½	6R2122	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
28	1 Meg.	½	6R6004	BTS-1 Meg.	Br.-Blk.-Grn. " "
29	220Ω	½	6R3933	BW-½-220	Red-Red-Br. IF Decoupling
30	47KΩ	½	6R6056	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
31	100Ω	½	6R6326	BW-½-100	Br.-Blk.-Br. AF Cathode
32	3.3 Meg.	½	6R2118	BTS-3.3 Meg.	Or.-Or.-Grn. AF Grid
33	220KΩ	½	6R6015	BTS-220K	Red-Red-Yl. AF Plate Load
34	470KΩ	½	6R6032	BTS-470K	Yl.-Vi.-Yl. Output Grid
35	150Ω	½	6R6392	BW-½-150	Br.-Grn.-Br. Output Cathode
36	1200Ω	½	6R6393	BTS-1200	Br.-Red-Red Bias Network
37	1200Ω	½	6R6393	BTS-1200	Br.-Red-Red " "
38	1200Ω	1	6R3972	BTA-1200	Br.-Red-Red Filter
39	220Ω	1	6R6152	BW-1-220	Red-Red-Br. "
40	27Ω	½	6R5683	BW-½-27	Red-Vi.-Blk. Surge Limiter

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
41A	2650Ω	3.8Ω	260Ω	.8Ω	25B76117	A-3876*	T22845*	A-2928*	*Drill new mounting holes.
B					25B76118				Alternate Transformer

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			MOTOROLA PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-105†		†Drill and tap magnet frame.
42	PM	3.8Ω	50B76196	Mod. P5-X		
	CONE DIA.	VC DIA.				
43	4-3/4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

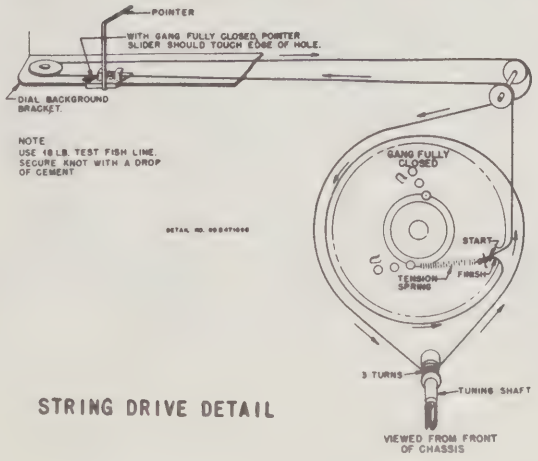
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	MOTOROLA PART No.	MEISSNER PART No.	
44	Loop Ant.		2.2Ω	24K77323		
45	Osc. Coil	1.2Ω	9Ω	24A76192	14-1040*	*Add 50MMFD from grid to high side tuning cap.
46	Input IF	15Ω	15Ω	24B470038		
47	Output IF	14Ω	13Ω	24B75487		
48	Wave Trap		65Ω	24A77336		

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					MOTOROLA PART No.		
49	Bayonet	6-8	0.15	Brown	65X11854		Type 47

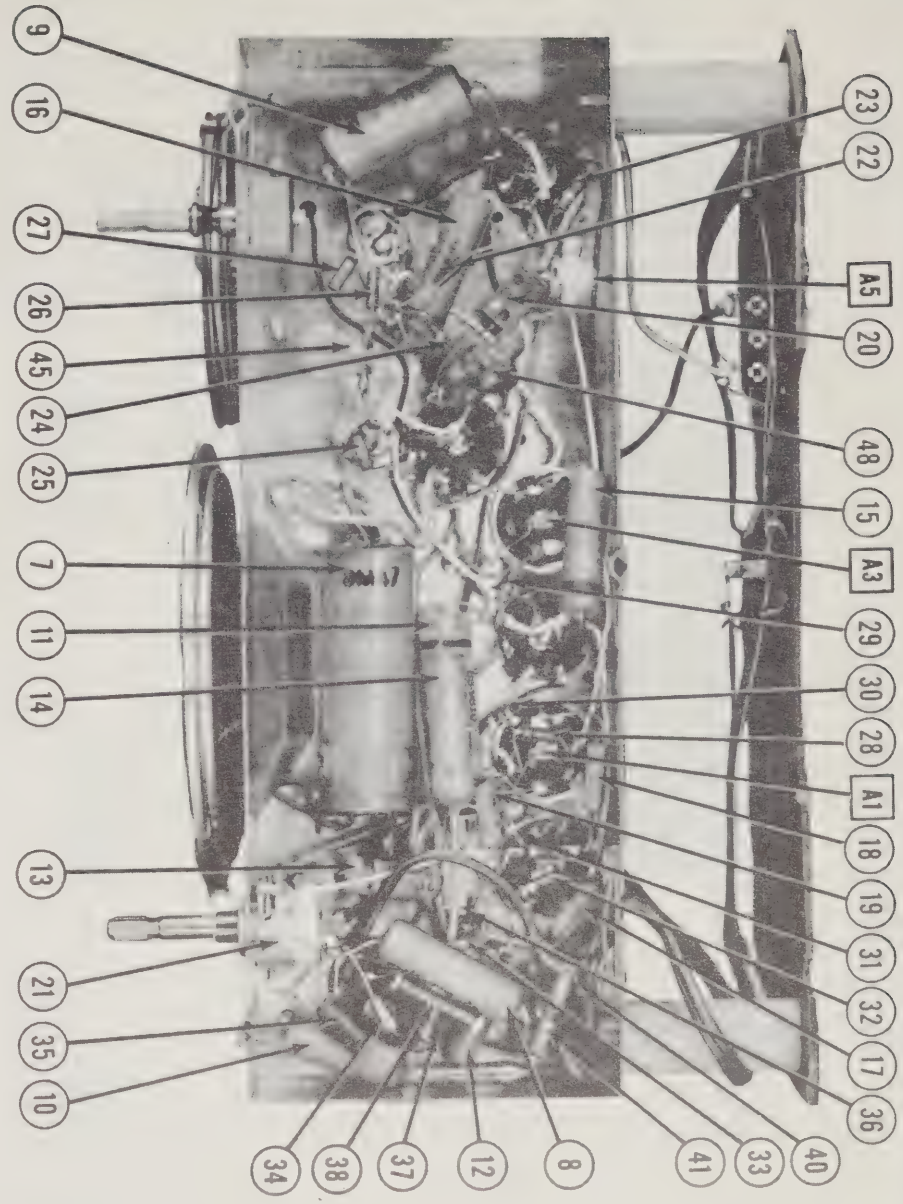
MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
50	2 Gang Var. Cap.	1X77339	(33-427 MMF , 34-201 MMF)
A5	Trimmer	20A26941	Wave Trap Adj.



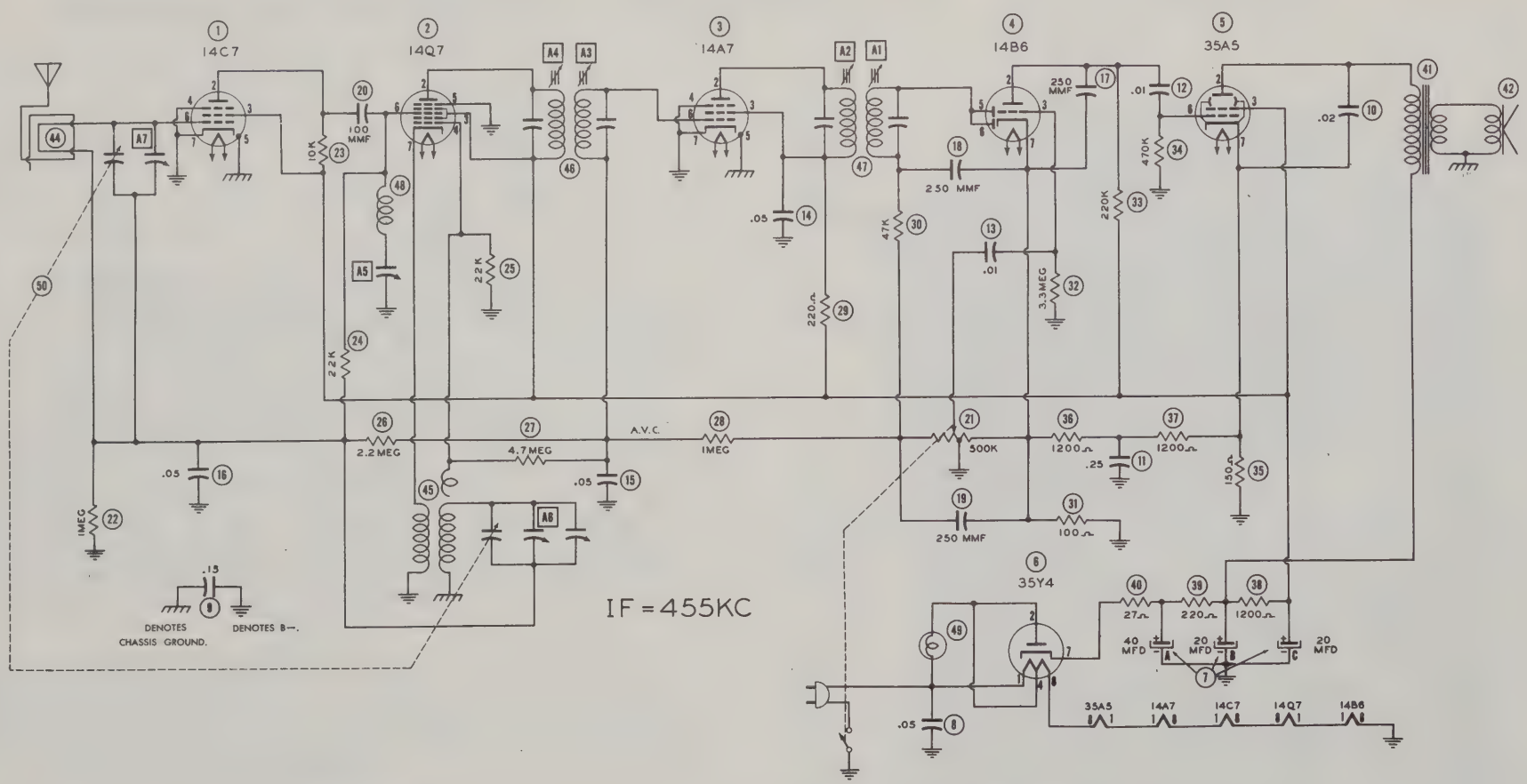
STRING DRIVE DETAIL

CHASSIS—BOTTOM VIEW



MOTOROLA MODELS 67X11, 67X12, 67X13 (Ch. HS-58)

MOTOROLA MODELS 67X11, 67X12, 67X13 (Ch. HS-58)



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14C7	36VAC	45VDC	71VDC	0V.	0V.	-.4VDC	0V.	24VAC
2	14Q7	12VAC	71VDC	71VDC	-9.8VDC§	0V.	-.4VDC	0V.	24VAC
3	14A7	47VAC	70VDC	70VDC	0V.	0V.	-.4VDC	0V.	36VAC
4	14B6	12VAC	55VDC	-.5VDC	.1VDC	-.6VDC	-.6VDC	.1VDC	0V.
5	35A5	47VAC	90VDC	71VDC	71VDC	2.3VDC	0V.	4.6VDC	77VAC
6	35Y4	117VAC	113VAC	95VDC	113VAC	0V.	108VDC	110VDC	77VAC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14C7	38Ω	60KΩ	50KΩ	0Ω	INF.	900KΩ	0Ω	25Ω
2	14Q7	12Ω	50KΩ	50KΩ	22KΩ	0Ω	920KΩ	1Ω	25Ω
3	14A7	50Ω	50KΩ	50KΩ	0Ω	INF.	800KΩ	0Ω	38Ω
4	14B6	12Ω	270KΩ	3 Meg.	100Ω	400KΩ	400KΩ	100Ω	0Ω
5	35A5	50Ω	50KΩ	50KΩ	50KΩ	650Ω	460KΩ	140Ω	80Ω
6	35Y4	115Ω	112Ω	50KΩ	112Ω	INF.	50KΩ	50KΩ	80Ω

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-20

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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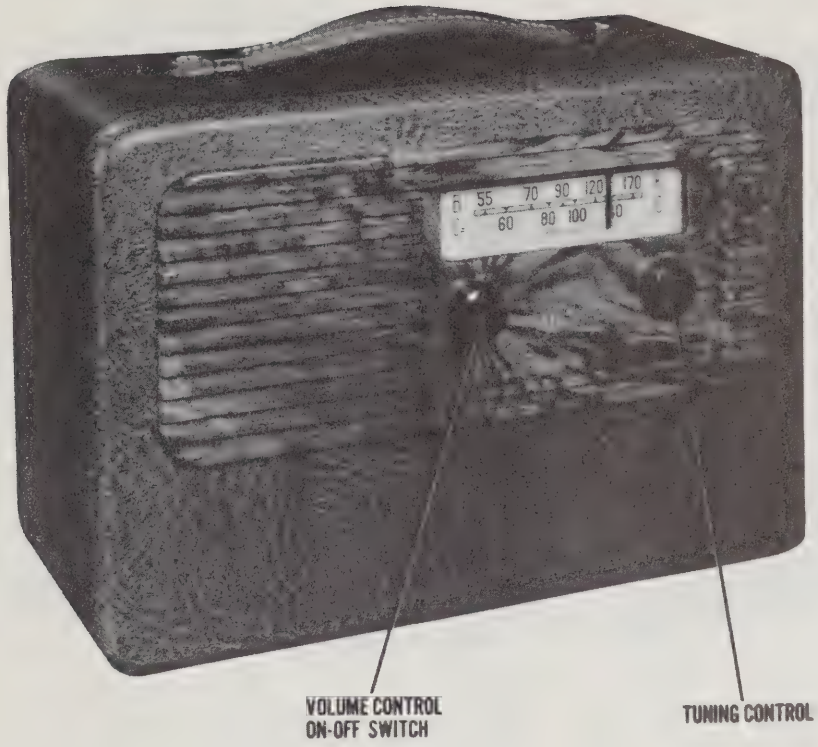
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

OLYMPIC MODEL 7-526
BATTERY-LINE OPERATED



OLYMPIC MODEL 7-526
BATTERY-LINE OPERATED

OLYMPIC MODEL 7-526

TRADE NAME	Olympic, Model 7-526
MANUFACTURER	Olympic Radio & Tele. Corp., 3101-19 38th Ave., Long Island City, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 1LN5 RF Amp., 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 3Q5GT Power Output.
POWER SUPPLY RATING	105-125 Volts AC-DC or 9 Volts "A" Supply and 90 Volts "B" Supply .230 Amp. @ 117 Volts AC or 55MA @ 9 Volts DC and 15MA @ 90 Volts DC
TUNING RANGE—BROADCAST	535-1650KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to extreme left edge of dial pointer line.

Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMFD. to reduce hum modulation. Repeat adjustments.
2		Loop	1500KC	1500KC	"	A5,A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	600KC	Tune for maximum output.	"	A8	Rock tuning cap. and adjust for maximum output. Repeat Steps 2 & 3 until no further improvement can be made.

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DATE 12/47 SET #30 FOLDER #4720-21

PARTS LIST AND DESCRIPTIONS

OLYMPIC MODEL 7-526
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: OLYMPIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	1LN5	1LN5	7AO	
2	Converter	1LA6	1LA6	7AK	
3	IF Amp.	1LN5	1LN5	7AO	
4	Det.-AVC-AF	1LH4	1LH4	5AG	
5	Power Output	3Q5GT	3Q5GT	7AP	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	80	150	CO-182	FP309*	DSB-8040-150		PRSA503010-*	EZ53215O-*‡	Filter - Blue
B	20	150		TC45			PRS150-30		" - Red
C	100	15			M-100-15			BRH-151	Filament Bypass-Yellow
7	.05	400	RCP10W4503A	TP426	S-4-05	TC-15	484-05	DT4S5	Line Filter
8	.005	600	RCP10W6502A	TP408	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
9	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
10	.005	600	RCP10W6502A	TP408	S-6-005	TC-25	684-005	DT6D5	" "
11	.05	400	RCP10W4503A	TP426	S-4-05	TC-15	484-05	DT4S5	Filament Bypass
12	.01	600	RCP10W6103A	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Screen Bypass
13	.02	400	RCP10W4203A	TP423	S-4-02	TC-12	484-02	DT4S2	AVC Filter
14	.1	200	RCP10W2104A	TP428	S-4-1	TC-1	484-.1	DT4P1	RF Screen Bypass
15	.05	400	RCP10W4503A	TP426	S-4-05	TC-15	484-05	DT4S5	Filament Bypass
16	.02	400	RCP10W4203A	TP423	S-4-02	TC-12	484-02	DT4S2	AVC Filter
17	100	500	RCM20A101M	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Grid Bypass
18	47	500	RCM20A470M	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.

*Parallel sections to obtain desired capacity. ‡Do not use bypass section.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	1 Meg.	½	PT-576	MK402	D13-137	AM-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 19A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

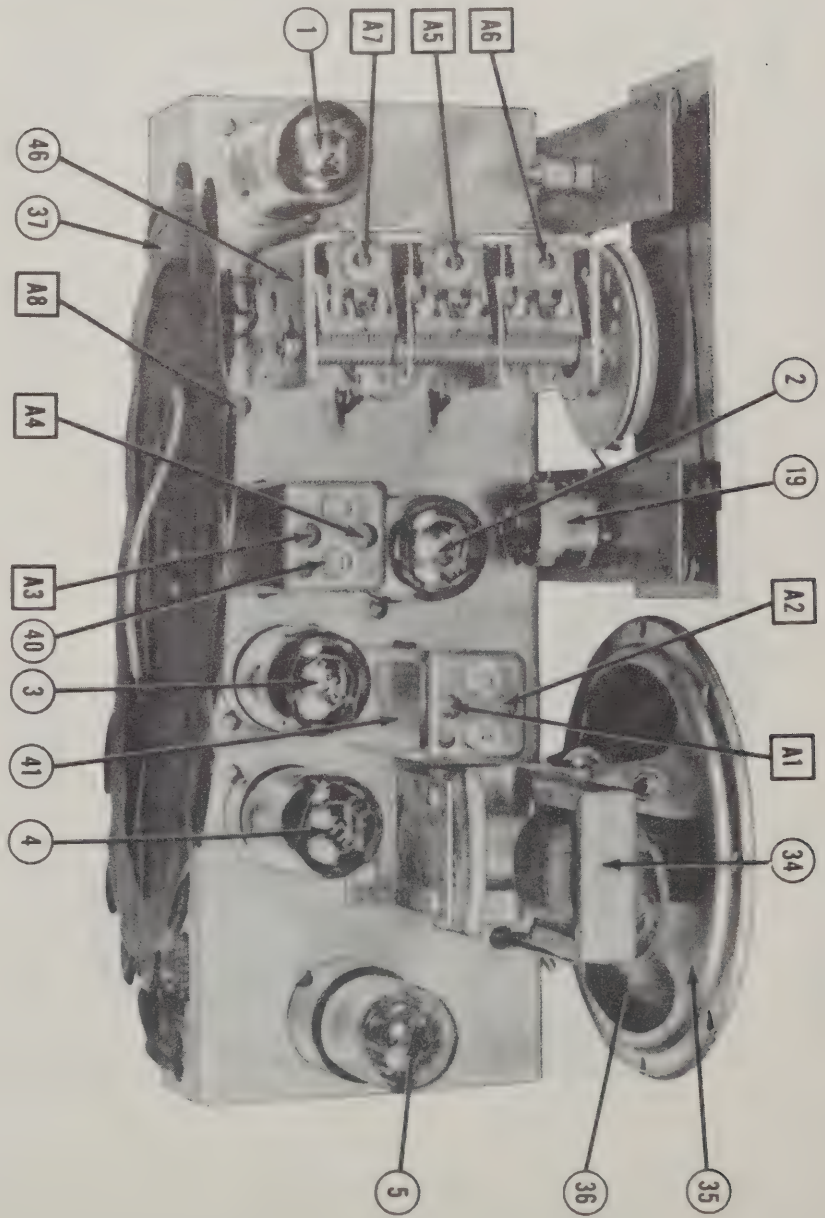
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: OLYMPIC PART No.	IRC PART No.	IDENTIFICATION CODES
20	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
21	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	3.3 Meg.	½	REB335M	BTS-3.3 Meg.	Or.-Or.-Grn. " "
23	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Oscillator Grid
24	33KΩ	½	REB333M	BTS-33K	Or.-Or.-Or. Converter Screen Dropping
25	1000Ω	½	REB102M	BTS-1000	Br.-Blk.-Red Filament String
26	820Ω	½	REB821M	BTS-820	Gray-Red-Br. Filament String
27	6.8 Meg.	½	REB685M	BTS-6.8 Meg.	Blue-Gray-Grn. AF Grid
28	1 Meg.	½	REB105M	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
29	2.2 Meg.	½	REB225M	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
30	1500Ω	½	REB152M	BTS-1500	Br.-Grn.-Red Filament String
31	2200Ω	1	REC222M	BTA-2200	Red-Red-Red Filter
32	27Ω	2	RED270K	BW-2-27	Red-Vi.-Blk. Rectifier Ballast
33	2400Ω	10	RE-879	AB-2500	Filament Dropping

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
34	7000Ω	3.5Ω	460Ω	.5Ω	Part of SK-476	A-3878†	T22S47†	A-2931†	†Bend mounting tabs down, file out slots and mount on original bracket.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: OLYMPIC PART No.	JENSEN PART No.		INSTALLATION NOTES
35	FIELD / PM	VC IMP. / 3.5Ω	SK-476	ST-105* Mod. P5-X		*Fabricate new mounting bracket.
36	CONE DIA. / 4-5/8"	VC DIA. / 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

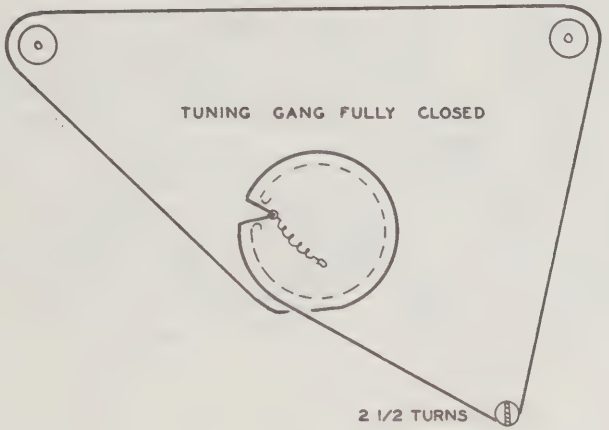
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: OLYMPIC PART No.	MEISSNER PART No.
37	Loop Ant.		1.8Ω	LP993	
38	RF Coil	105Ω	15Ω	CL954	14-1027
39	Osc. Coil	4.8Ω	4.1Ω	CL957	14-1040
40	Input IF	20.5Ω	20.5Ω	TR707	16-6666
41	Output IF	18.5Ω		TR708	16-6670

BATTERIES

ITEM No.	VOLTAGE	OLYMPIC PART No.	EVEREADY "A"	EVEREADY "B"	EVEREADY "A-B"	INSTALLATION NOTES
42	9V "A"		#746			2 Used in series
43	90V "B"			#482		" " " "

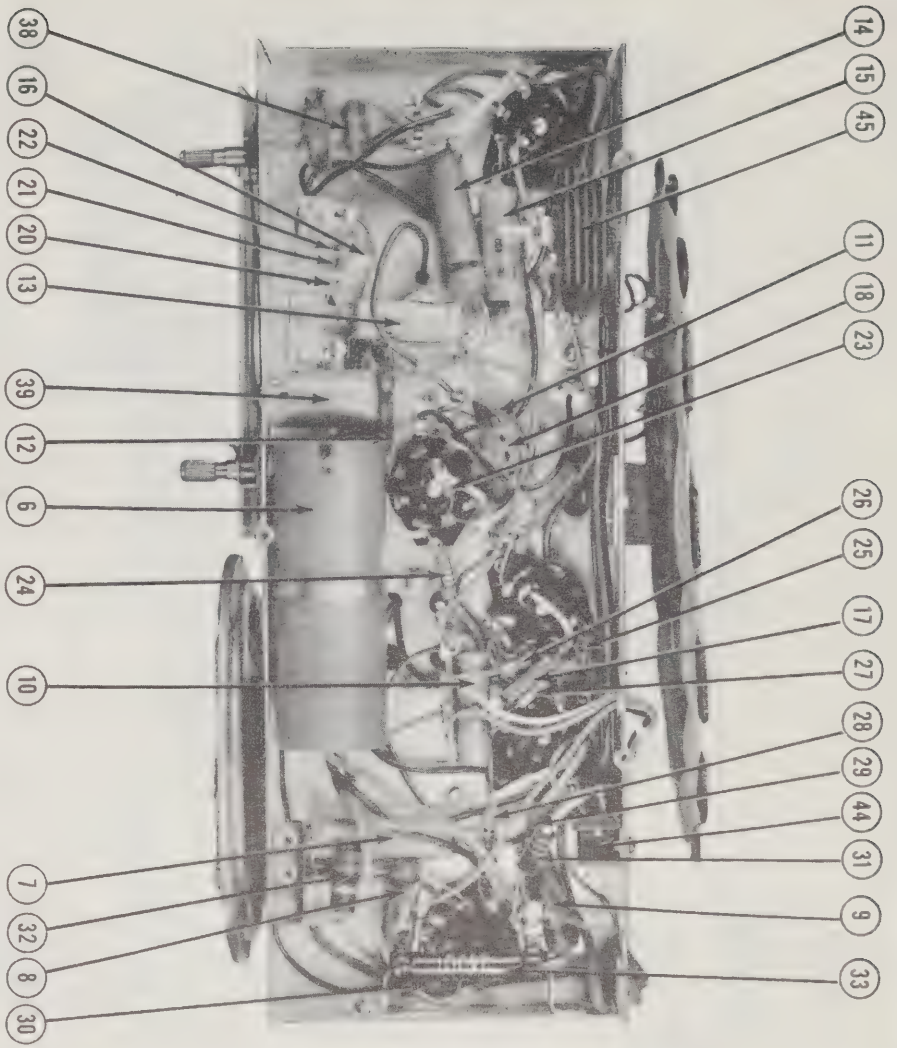
MISCELLANEOUS

ITEM No.	PART NAME	OLYMPIC PART No.	NOTES
44	Switch	SW-185	AC-DC-Batt.
45	Rectifier	RF-770	Selenium
46	3 Gang Var. Cap.	CV-816	(21-481 MMF, 21-481MMF, 21-481 MMF)
A8	Padder	CT-388	Osc. Adj.
	Dial Pointer	PO-385	



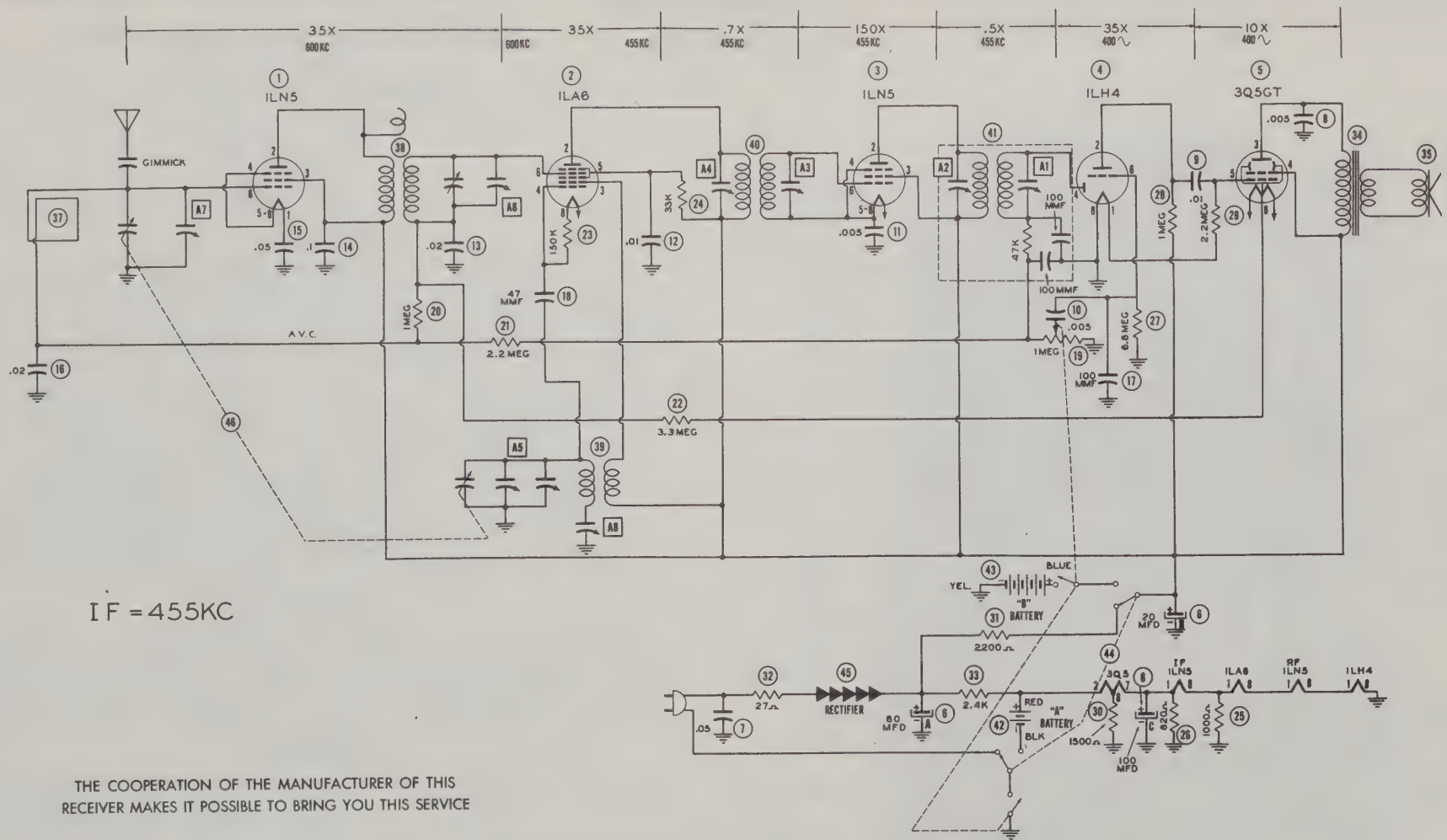
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



OLYMPIC MODEL 7-526
BATTERY-LINE OPERATED

OLYMPIC MODEL 7-526
BATTERY-LINE OPERATED



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	3VDC	95VDC	95VDC	1.5VDC	1.5VDC	.4VDC	0V.	1.5VDC
2	1LA6	4.4VDC	95VDC	95VDC	-16VDC§	56VDC	.5VDC	0V.	3VDC
3	1LN5	5.9VDC	95VDC	95VDC	4.4VDC	4.4VDC	4.4VDC	0V.	4.4VDC
4	1LH4	1.5VDC	55VDC	0V.	-.2VDC	0V.	-.1VDC	0V.	0V.
5	3Q5GT	0V.	8.8VDC	92VDC	95VDC	.1VDC	0V.	5.9VDC	7.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3 *	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LN5	*	4.4KΩ	4.4KΩ	*	*	2 Meg.	INF.	*
2	1LA6	*	4.4KΩ	4.4KΩ	180KΩ	37KΩ	2 Meg.	INF.	*
3	1LN5	*	4.4KΩ	4.4KΩ	*	*	*	INF.	*
4	1LH4	*	1 Meg.	INF.	800KΩ	INF.	7 Meg.	INF.	0Ω
5	3Q5GT	0Ω	*	4.8KΩ	4.4KΩ	2.8 Meg.	INF.	*	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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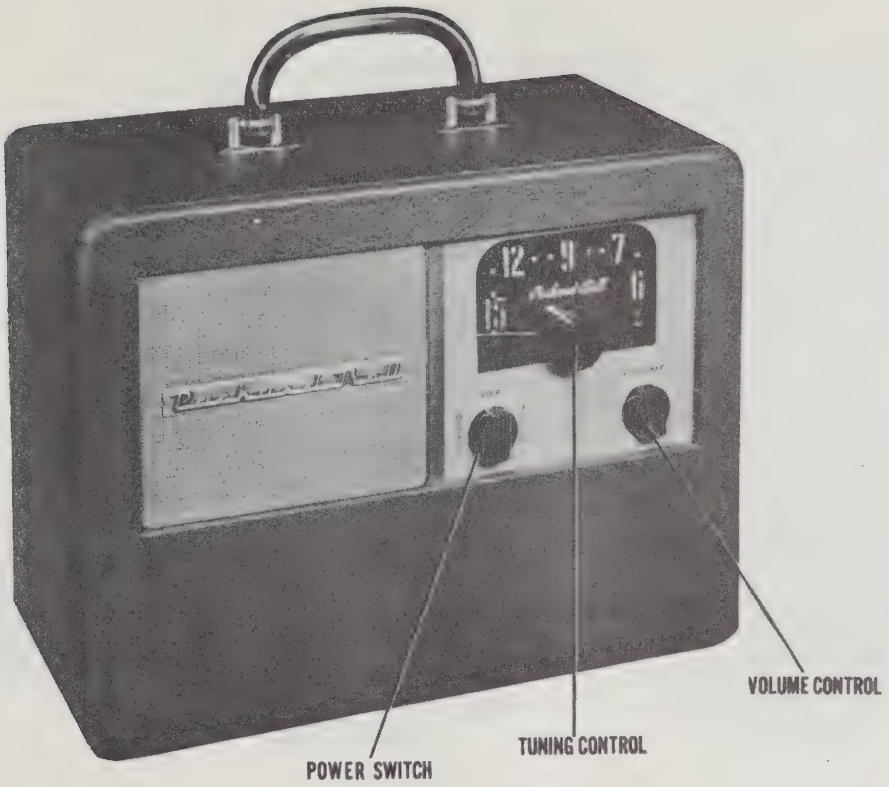
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-21

The stage gain measured values listed above are approximate values for an average operative stage rather than an absolute value. It should be borne in mind that is is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting to chassis.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PACKARD-BELL MODEL 471
BATTERY-LINE OPERATED



PACKARD-BELL MODEL 471
BATTERY-LINE OPERATED

PACKARD-BELL MODEL 471

TRADE NAME	Packard-Bell, Model 471
MANUFACTURER	Packard Bell Co., 3443 Wilshire Blvd., Los Angeles, Calif.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3V4 Power Output,
POWER SUPPLY	105-120 Volts AC-DC or 7.5 Volt "A" Supply & 90 Volt "B" Supply in Pack Form
RATING	.120 Amp. @ 117 Volts AC or 48MA @ 7.5 Volts DC & 18MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to Pin 6 (grid) 1R5. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy ant. to 200MMF to reduce hum modulation.
2	.01 MFD	"	1620KC	"	"	A5	Adjust for maximum output.
3		Loop	1500KC	Tune for maximum output	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
4		"	600KC	"	"	Loop	Loop is correct when turning A6 either way causes a decrease in signal. If signal increases when A6 is loosened turn back a short piece of the outer winding of the loop. If output increases when A6 is tightened then extend the outer winding of the loop and recheck with A6. After this adjustment of loop always repeat Steps 2 and 3.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PACKARD BELL PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PACKARD-BELL PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	24007A	FP304	DY-304	EL-351	AF84D20A	UP4CJ65	■ Filter
B	20	150							▲ "
C	100	12							Filament Bypass
6	100	25	24040	TC2501	M-100-25	UHC-102	PRSA25-100	BRH251	"
7	.05	400	23009	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.01	400	23022	TP421	S-4-01	TC-11	484-01	DT4S1	Audio Screen Bypass
9	.005	600	23004	TP408	S-6-005	TC-25	684-005	DT6D5	Output Plate Bypass
10	.05	200	23009	TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
11	.1	200	23019	TP428	S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
12	.1	200	23019	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
13	.05	200	23017	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
14	470		23908	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Audio Coupling
15	47		23912	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Audio Plate Bypass
16	470		23908	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Audio Coupling
17	220		23915	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Diode Filter
18	47		23912	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.

CONTROLS

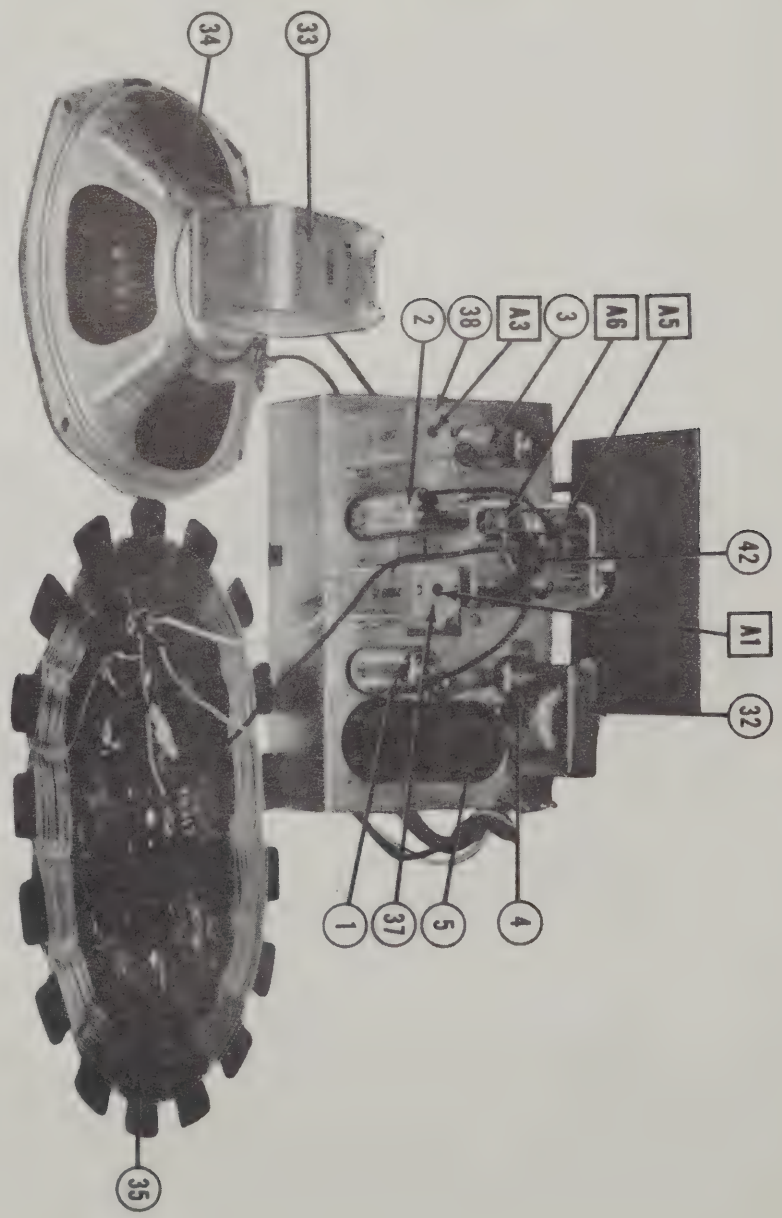
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD BELL PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
19A	3 Meg.	½	25005A	MR57	D13-140	M-67-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 19A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PACKARD-BELL PART No.	IRC PART No.	IDENTIFICATION CODES
20	56KΩ	½		BTS-56K	Grn.-Blue-Or. Oscillator Grid - See Note 1
21	1500Ω	½	73027	BTS-1500	Br.-Grn.-Red Screen Decoupling
22	4.7 Meg.	½	73057	BTS-4.7 Meg	Yl.-Vi.-Grn. AVC Network
23	10 Meg.	½	73059	BTS-10 Meg.	Br.-Blk.-Blue AF Grid
24	4.7 Meg.	½	73057	BTS-4.7 Meg	Yl.-Vi.-Grn. AF Screen Dropping
25	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
26	1 Meg.	½	73053	BTS-1 Meg.	Br.-Blk.-Grn. Output Grid
27	270Ω	½	73018	BW-½-270	Red-Vi.-Br. Filament String
28	1000Ω	½	73025	BTS-1000	Br.-Blk.-Red "
29	2500Ω	10	73917	AB-2500	Filament Dropping
30	2700Ω	1	73128	BTA-2700	Red-Vi.-Red Filter
31	47Ω	1	73086	BW-1-47	Yl.-Vi.-Blk. Surge Limiter - See Note 2

Note 1 - Some models use 47KΩ in this application. IRC replacement BTS-47K.
Note 2 - Some models use two 100Ω resistors in this application. Replacement same as above.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PACKARD-BELL PART No.	STANCOR PART No.	THORDARSON PART No.		
	PRI.	SEC.	PRI.	SEC.					
32	8800Ω	3.5Ω	1300Ω	.6Ω	89414A	A-3879	T22S47	A-2900	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PACKARD BELL PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-110		
33	PM	3.5Ω	83300	Mod. P6V		
	CONE DIA.	VC DIA.				
34	6"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PACKARD-BELL PART No.	MEISSNER PART No.	
35	Loop Ant.	.1Ω	3Ω	29322	14-1040	
36	Osc. Coi	9Ω	3.2Ω	29210		
37	Input IF	22Ω	21.8Ω	29009		
38	Output IF	22Ω	23Ω	29009		

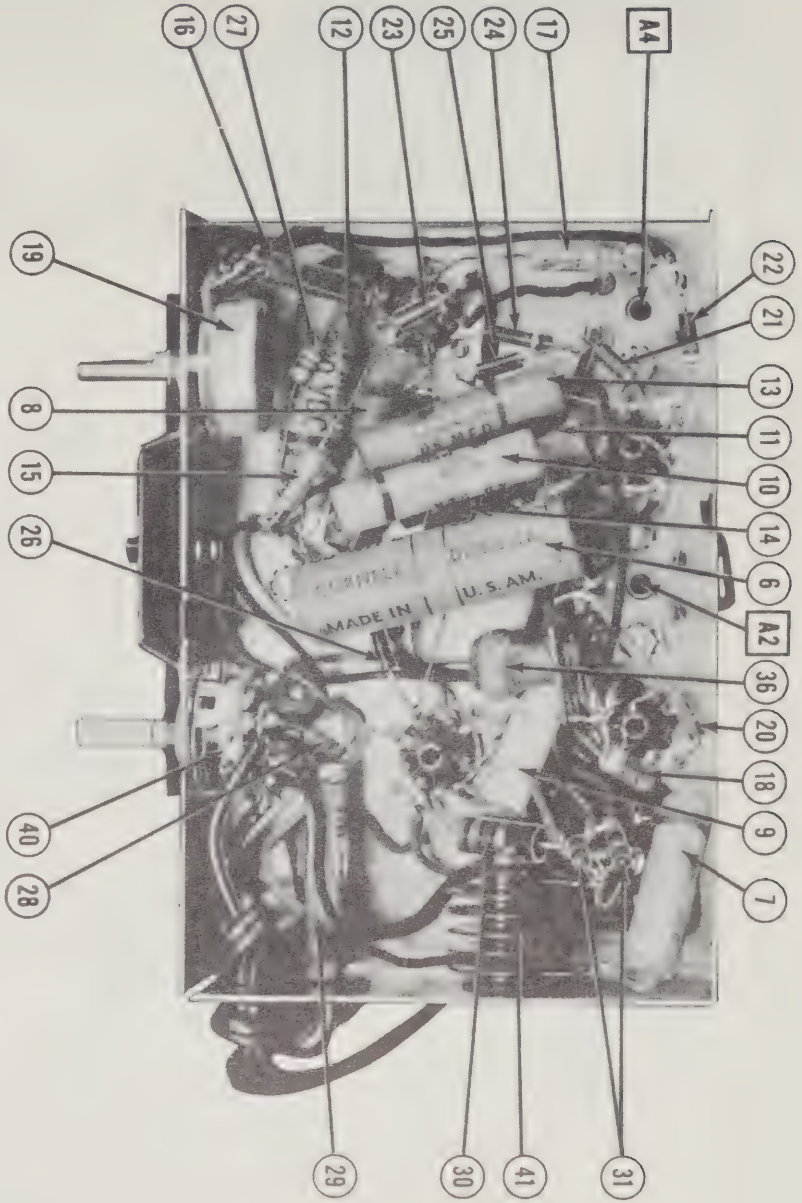
BATTERIES

ITEM No.	VOLTAGE	PACKARD-BELL PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
39	7.5V "A" 90 V "B"				#754	

MISCELLANEOUS

ITEM No.	PART NAME	PACKARD BELL PART No.	NOTES
40	Switch	86015	Power Change-Over
41	Rectifier	72001	Selenium
42	2 Gang Var. Cap.	23502h	30-268 MMF, 30-440 MMF
	Dial	38067	
	Dial Pointer	67028	
	Cabinet	21085	

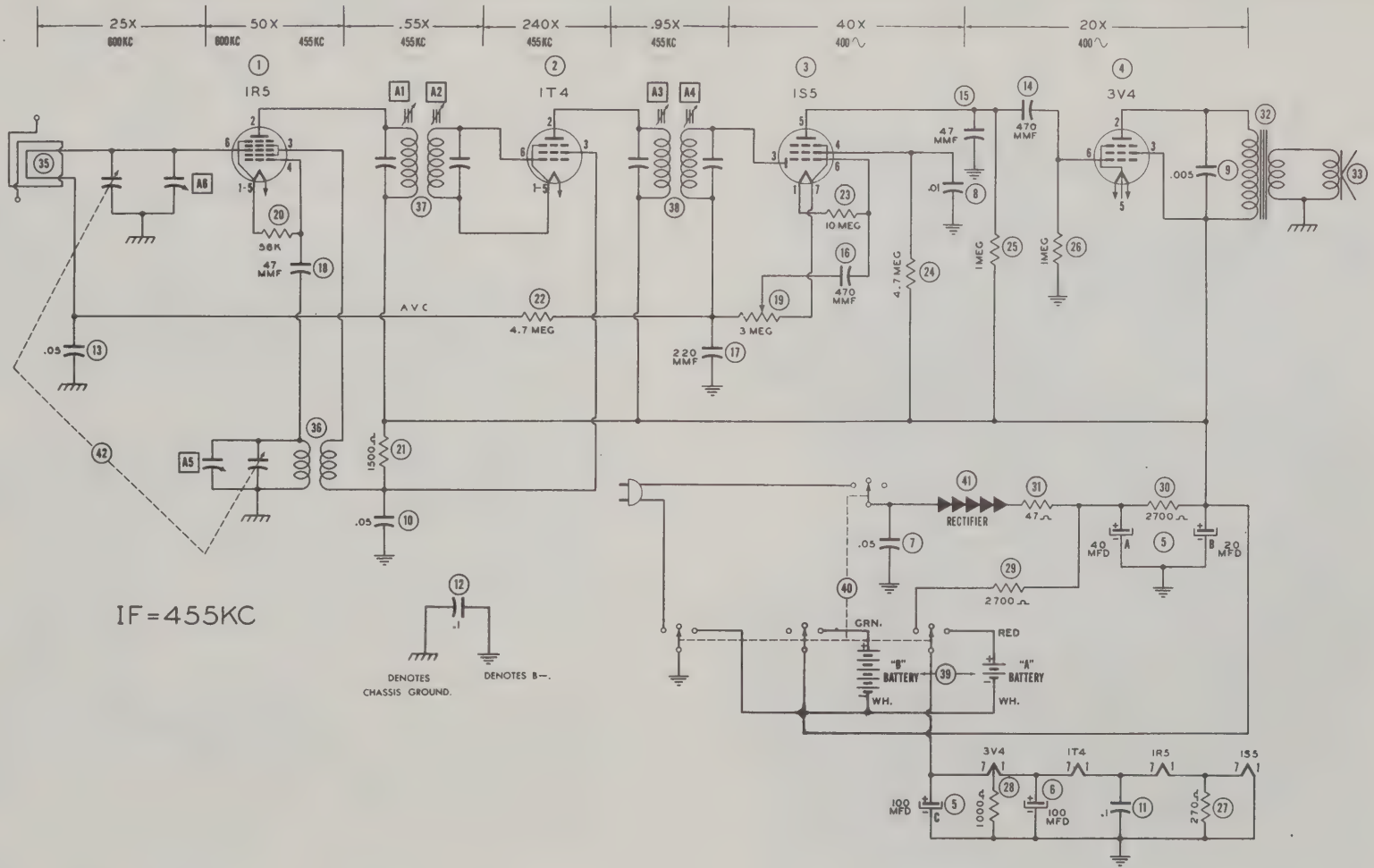
CHASSIS—BOTTOM VIEW



DATE 12/47 SET #30 FOLDER #4720-22

PACKARD-BELL MODEL 471
BATTERY OPERATED

PACKARD-BELL MODEL 471
BATTERY OPERATED



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.4VDC	80VDC	70VDC	-32VDC§	1.4VDC	0V.	2.8VDC
2	1T4	2.8VDC	80VDC	70VDC	0V.	2.8VDC	2.8VDC	4.1VDC
3	1S5	0V.	0V.	-.2VDC	13VDC	15VDC	0V.	1.4VDC
4	3V4	4.1VDC	74VDC	80VDC	0V.	5.2VDC	0V.	6.4VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	5KΩ	6.5KΩ	55KΩ	*	8 Meg.	*
2	1T4	*	5KΩ	6.5KΩ	8 Meg.	*	*	*
3	1S5	0Ω	0Ω	3 Meg.	4.7 Meg.	1 Meg.	10 Meg.	*
4	3V4	*	6KΩ	5KΩ	INF.	*	1 Meg.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4720-22

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to low side of volume control during stage gain measurements.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

PHILCO MODEL
UN6-400

PHILCO MODEL
UN6-400

PHILCO MODEL UN6-400

TRADE NAME	Philco, Model UN6-400
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	Battery Operated Universal Automotive Superheterodyne Receiver
TUBES (SIX)	Types, 7A7 RF Amp., 7B8 Converter, 7A7 IF Amp., 7B6 Det.-AVC-AF, 7C5 Power Output, 7Y4 Rectifier.
POWER SUPPLY	6 Volt Storage Battery
TUNING RANGE—BROADCAST	550-1580KC RATING 7.4 Amp. @ 6.3 Volts DC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.05 MFD	High side to front stator of tuning cap. Low side to chassis.	455KC	Tuning cap. fully closed	Across voice coil	A1,A2, A3,A4.	Ground rear stator of tuning cap. to chassis. Adjust for maximum output in order given, then repeat. Remove ground from rear stator.
2	10MMFD cap. in series with ant. lead	High side to 10MMFD cap. Low side to chassis.	1580KC	Tuning cap. fully open.	"	A5	Adjust for maximum output.
3	"	"	1400KC	Tune for maximum output.	"	A6	" " " "
4	"	"	580KC	"	"	A7	Rock tuning cap. and adjust for maximum output. Repeat Steps 2, 3 and 4 until no further improvement can be made.

After receiver has been installed in car turn tuning capacitor fully closed and set pointer at index dot at low frequency end of dial. Also tune in weak signal near 1400KC and adjust A6 for maximum volume.

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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PARTS LIST AND DESCRIPTIONS

PHILCO MODEL UN6-400

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	RF Amp.	7A7	7A7	8V	
2	Converter	7B8	7B8	8X	
3	IF Amp.	7A7	7A7	8V	
4	Det.-AVC-AF	7B6	7B6	8W	
5	Power Output	7C5	7C5	6AA	
6	Rectifier	7Y4	7Y4	5AB	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
7A	10	350	61-0089	FP328	DY-310	EL-153	AF32K4A	UP1135C	▲ Filter
b	15	350							■ "
C	20	25							Cathode Bypass
8	.5	100	61-0137	TP431	SHH-1	TC-5	434-.5	DT4P5	Hash Filter
9	.005	1500		OW332	TM-16-005	TR-25	1684-005	MD16D5	Buffer
10	.07	100	61-0152	TP427	S-6-06	TC-16	484-06	DT4S6	Feedback
11	.01	1000		TP434	TM-10-01	TR-11	1084-01	MD16S1	Output Plate Bypass
12	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
13	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	Tone Comp.
14	.25	400	61-0125	TP420	S-4-25	TC-2	484-.25	DT4P25	RF Bypass Pwr. Supply
15	.1	200	30-4527	TP428	S-4-1 .	TC-1	434-.1	DT4P1	Cathode Bypass
16	.006	400	30-4504	TP409	S-6-006	TC-26	484-006	DT6D6	Audio Coupling
17	.05	200	30-4518	TP426	S-4-05	TC-15	484-05	DT4S5	IF Cathode Bypass
18	.05	200	30-4518	TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Cathode Bypass
19	.05	200	30-4518	TP426	S-4-05	TC-15	484-05	DT4S5	Screen Bypass
20	.05	200	30-4518	TP426	S-4-05	TC-15	484-05	DT4S5	RF Cathode Bypass
21	.05	200	30-4518	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
22	.01	400	61-0120	TP421	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Coupling
23	250	500	60-1024307	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	"A" RF Bypass
24	250	500	60-1024530	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Fil. RF Bypass
25	250	500	60-1024530	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Tone Comp.
26	250	500	60-1024530	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Osc. Feedback
27	27		60-0024530	MC220	MO.5-425	MS-425	1468-000025	5W5Q25	Fixed Trimmer
28	250	500	60-1024530	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	RF Coupling
29	250	500	60-1024530	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Fil. Bypass

CONTROLS

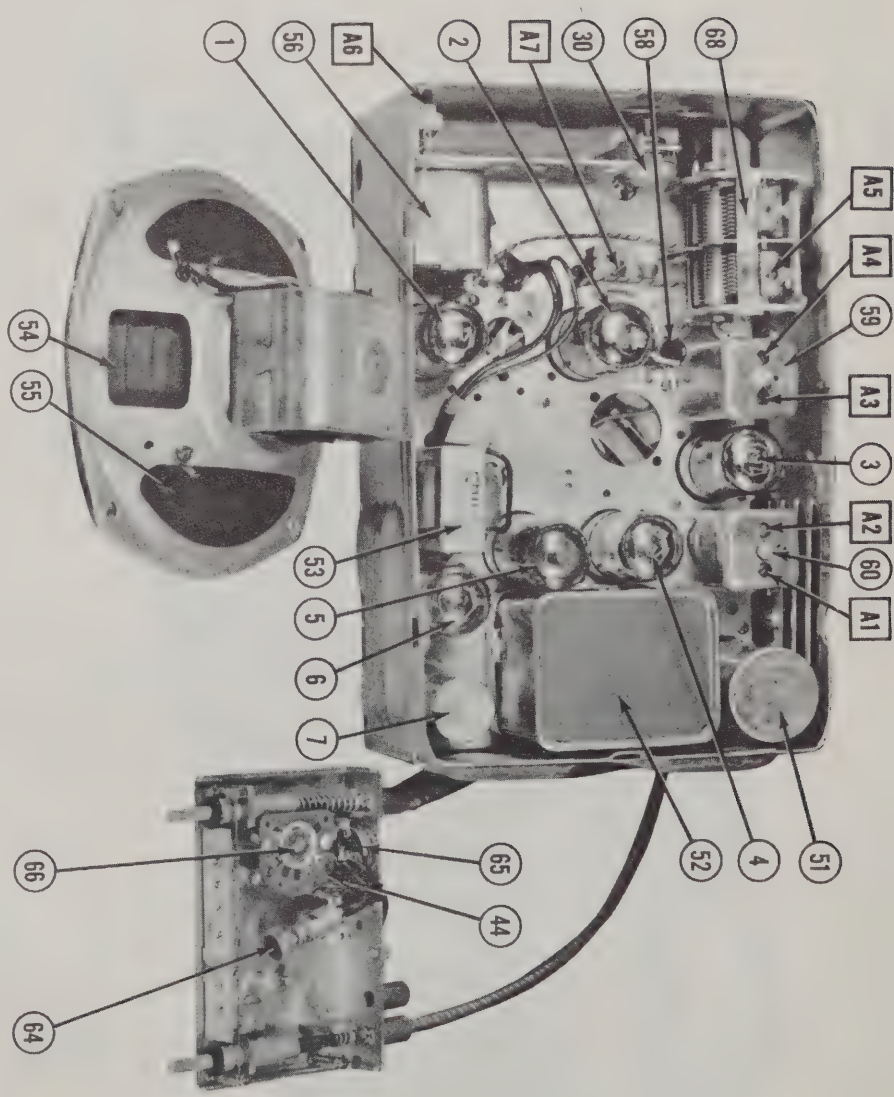
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
30	350KΩ	½	67-0043				Volume Control

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
31	680Ω	½	66-1683340	BTS-680	Blue-Gray-Br. RF Cathode
32	3300Ω	½	66-2333340	BTS-3300	Or.-Or.-Red RF Plate Load
33	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Converter Grid
34	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. Converter Cathode
35	68KΩ	½	66-3683340	BTS-68K	Blue-Gray-Or. Converter Anode Dropping
36	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Oscillator Grid
37	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
38	3300Ω	1	66-2334340	BTA-3300	Or.-Or.-Red Decoupling
39	22KΩ	1	66-3224340	BTA-22K	Red-Red-Or. Screen Dropping
40	470Ω	½	66-1473340	BTS-470	Yl.-Vi.-Br. IF Cathode
41	15 Meg.	½	66-6151540	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
42	330Ω	½	66-1333340	BW-½-330	Or.-Or.-Br. AF Cathode
43	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
44	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Tone Compensation
45	470KΩ	½	66-4473340	BTS-470K	Yl.-Vi.-Yl. Output Grid
46	220Ω	1	66-1224360	BW-1-220	Red-Red-Br. Output Cathode
47	1500Ω	½		BTS-1500	Br.-Grn.-Red Tone Compensation-See Note
48	220Ω	½	66-1223340	BW-½-220	Red-Red-Br. Hash Suppression
49	150Ω	½	66-1153340	BW-½-150	Br.-Grn.-Br. " "
50	1000Ω	1	66-2104340	BTA-1000	Br.-Blk.-Red Filter

Note-Some models use 680Ω in this application. Replacement same as #31.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	RADIART PART No.	INSTALLATION NOTES
51	Interrupter	6.3	115~	83-0025	859	5326P	

TRANSFORMER (VIBRATOR)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDARSON PART No.	
52	6.3V DC @ 4.3A	520V CT @ .057A			65-0234			

TRANSFORMER (OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	INSTALLATION NOTES
53	5500Ω	3.3Ω	380Ω	.4Ω	65-0419	A-3877*	T22546*		*Drill new mounting holes.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: PHILCO PART No.	JENSEN PART No.		INSTALLATION NOTES
	FIELD RES.	VC IMP.				
54	4.4Ω	3.3Ω	73-0059			
	CONE DIA.	VC DIA.				
55	6-1/8"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: PHILCO PART No.	MEISSNER PART No.
56	Ant. Coil		1.5Ω	65-0323	
57	Ant. Choke Coil		.5Ω	65-0168	
58	Osc. Coil		8Ω	65-0420	14-1040
59	Input IF	16Ω	11Ω	65-0319	16-6658
60	Output IF	22Ω		65-0320	16-6670
61	RF Choke	0Ω		65-0433	
62	RF Choke		0Ω	65-0037	
63	RF Choke		0Ω	65-0452	

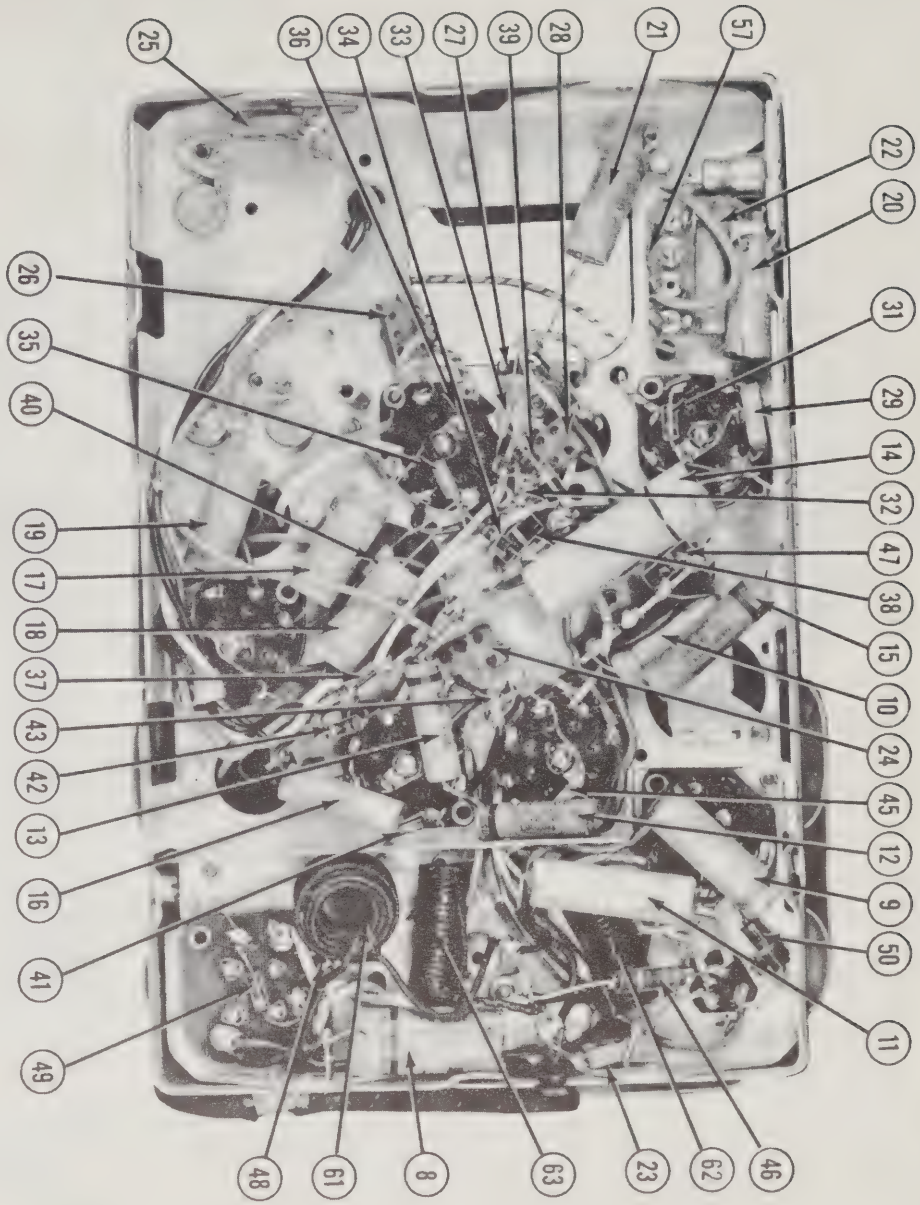
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: PHILCO PART No.		INSTALLATION NOTES
64	Bayonet	6-8		White	34-2039		Type 422

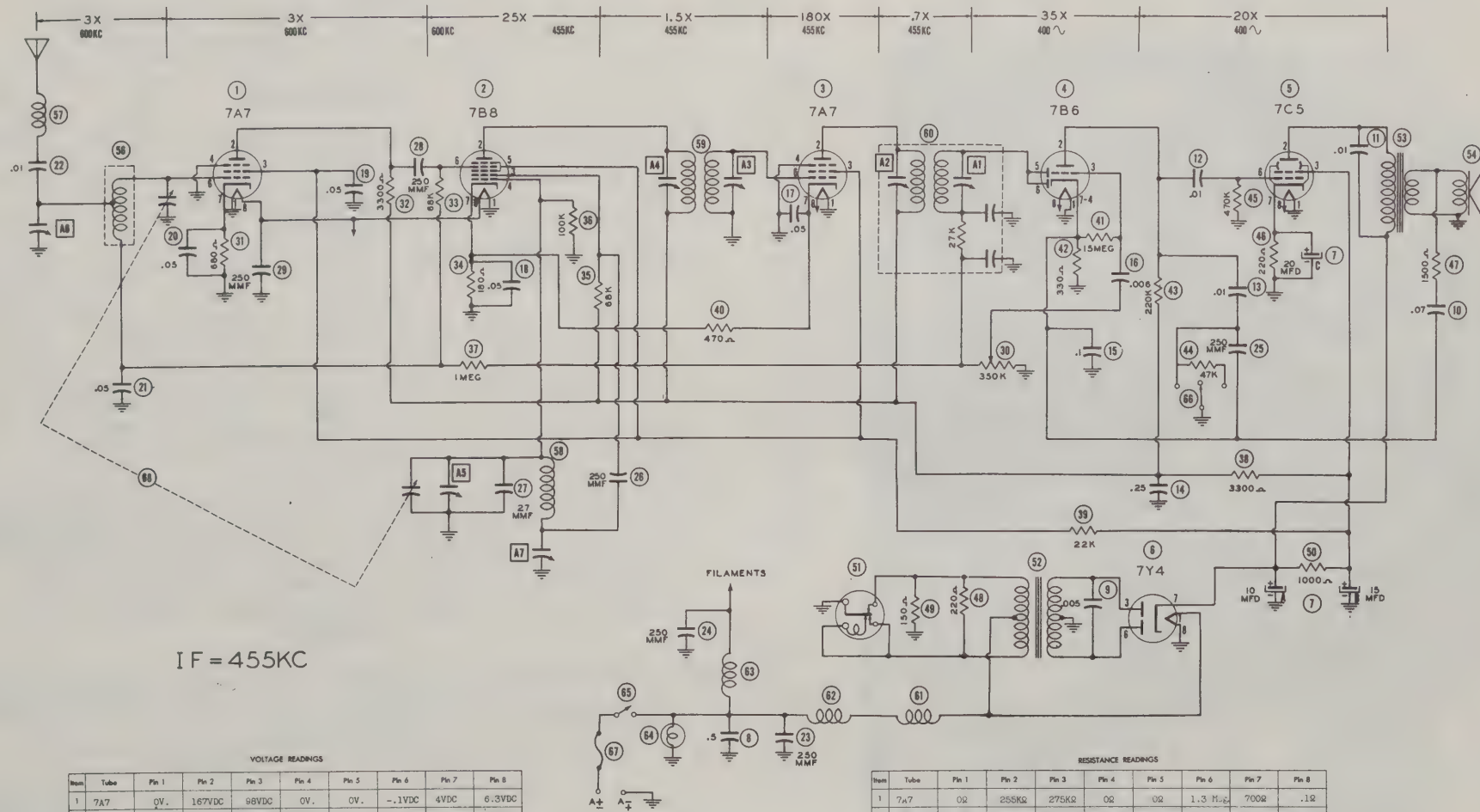
MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
65	On-Off Switch	85-0112	
66	Tone Switch	77-0733	
67	Fuse		15 Amp.
68	2 Gang Var. Cap	63-0077	(13-418MMF, 13-418M1F)
A6	Trimmer	77-0545	Ant. Adj.
A7	Padder	63-0048	Osc. Adj.
	Dial	55-1194	
	Pointer	57-1889	

CHASSIS—BOTTOM VIEW



DATE 12/47
SET #50
FOLDER #4720-23
PHILCO MODEL UN6-400
PHILCO MODEL UN6-400



VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	0V.	167VDC	98VDC	0V.	0V.	-.1VDC	4VDC	6.3VDC
2	7B8	0V.	183VDC	85VDC	-4VDC§	98VDC	-.1VDC	2.3VDC	6.3VDC
3	7A7	0V.	183VDC	98VDC	0V.	0V.	0V.	5.4VDC	6.3VDC
4	7B6	0V.	98VDC	-.6VDC	.1VDC	-.6VDC	-.6VDC	.1VDC	6.3VDC
5	7C5	0V.	225VDC	220VDC	0V.	240VDC	0V.	10.6VDC	6.3VDC
6	7Y4	6.3VDC	0V.	240VAC	0V.	0V.	240VAC	240VDC	0V.

§TAKEN WITH VACUUM TUBE VOLTMETER.

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RESISTANCE READINGS

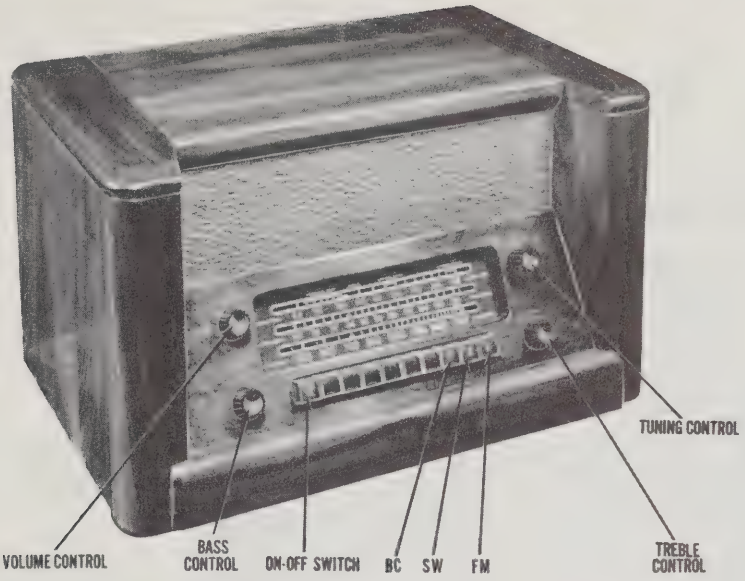
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	7A7	0Ω	255KΩ	275KΩ	0Ω	0Ω	1.3 Meg.	700Ω	.1Ω
2	7B8	0Ω	250KΩ	340KΩ	100KΩ	275KΩ	1.3 Meg.	180Ω	.1Ω
3	7A7	0Ω	250KΩ	275KΩ	0Ω	0Ω	15Ω	900Ω	.1Ω
4	7B6	0Ω	470KΩ	15 Meg.	330Ω	360KΩ	360KΩ	330Ω	.1Ω
5	7C5	0Ω	250KΩ	250KΩ	INF.	250KΩ	470KΩ	210Ω	.1Ω
6	7Y4	.1Ω	INF.	580Ω	INF.	INF.	510Ω	250KΩ	0Ω

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-23

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting negative (-) 3 volts to the AVC line.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 6.3 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



PHILCO MODEL 48-482

TRADE NAME	Philco, Model 48-482
MANUFACTURER	Philco Corp., Tioga & "C" Sts., Philadelphia, Pa.
TYPE SET	AC Operated Multi-Band AM-FM Superheterodyne Receiver with Loop Antenna
TUBES (NINE)	Types, 7W7 FM RF Amp., 7F8 Converter, 7H7 1st IF Amp., 7B7 2nd IF Amp., 7H7 3rd IF Amp., FM1000 FM Det., 7B6 or 6SQ7GT Det.-AVC-AF,, 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	105-120 Volts AC
TUNING RANGE—BROADCAST	540-1720KC RATING .60 Amp. @ 117 Volts AC
	SHORT WAVE 9.3-15.5MC FREQ. MOD. 88-108MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap fully closed and set pointer 3-5/16" from left edge of dial back plate.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

When complete alignment must be made AM alignment must be done first. If FM alignment is not necessary then AM only may be done.

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to front stator of tuning cap. Low side to chassis.	455KC	BC	Tuning cap. fully open.	From terminal 3 of ant. terminal strip to chassis.	A1,A2, A3,A4, A5,A6.	Adjust for maximum output in order given once only. Do not repeat.
2		Loop	15MC	SW	9-1/2" from left edge of dial backplate.	"	A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Tune signal gen. to 15.9MC. If image is not heard tune sig. gen. to 15MC and loosen trimmer until next peak is obtained. Adjust for maximum output and recheck for image.
3		"	"	"	Tune for maximum output.	"	A8	Rock tuning cap. and adjust for maximum output.
4		"	1700KC	BC	9-3/4" from left edge of dial backplate.	"	A9	Adjust for maximum output
5		"	1500KC	"	Tune for maximum output.	"	A10	" " " "
6		"	580KC	"	"	"	A11	Rock tuning cap. and adjust for maximum output. Repeat Steps 4, 5 & 6 until no further improvement can be made making Step 4 last adjustment.

SEE BACK PAGE FOR FM ALIGNMENT

HOWARD W. SAMS & CO., INC. • 2924 East Washington Street • Indianapolis 6, Indiana

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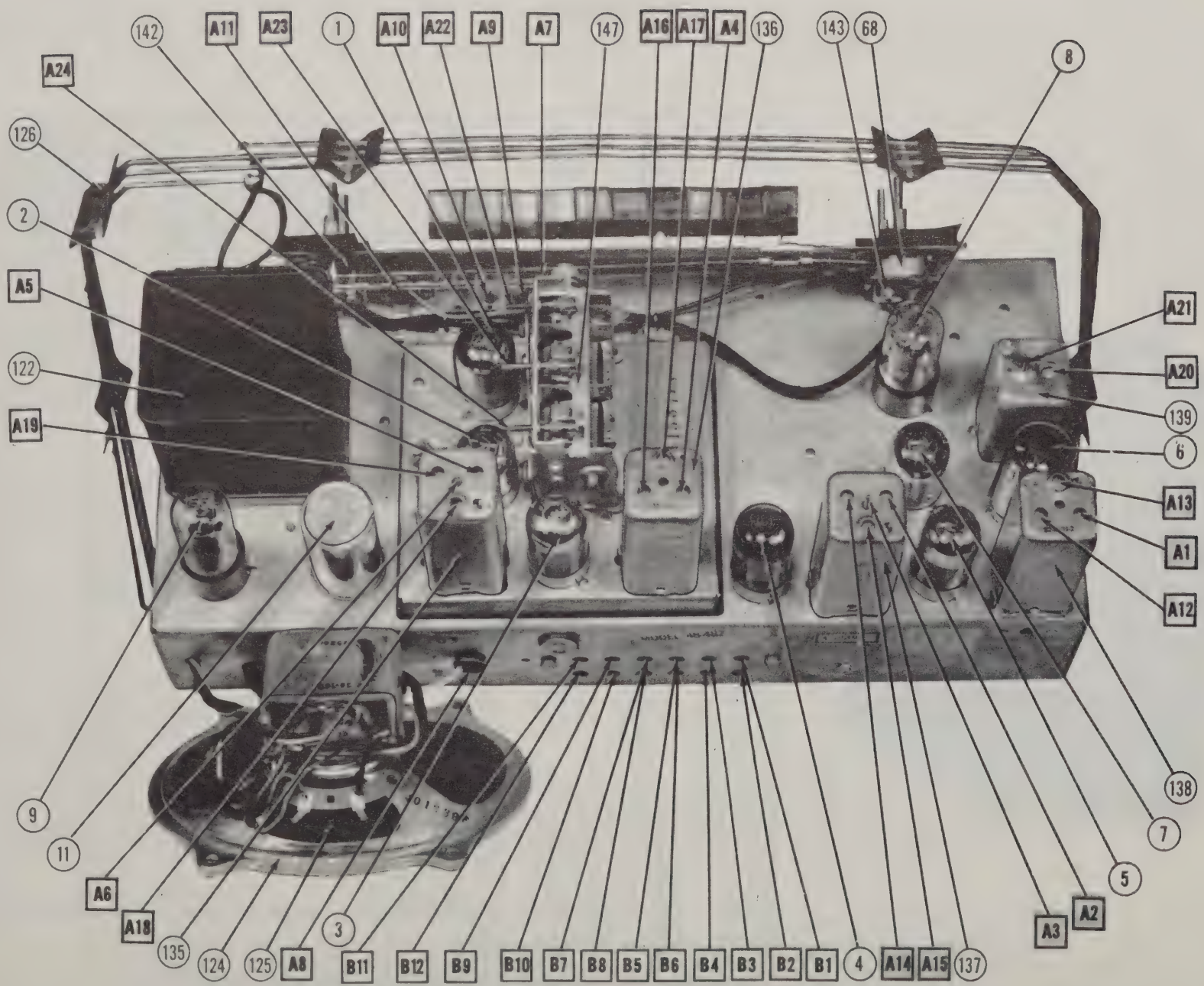
DATE 12/47 SET #30 FOLDER #4720-24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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: PHILCO PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	FM RF Amp.	7W7	7W7	8BJ	
2	Converter	7F8	7F8	8BW	
3	1st IF Amp.	7H7	7H7	8V	
4	2nd IF Amp.	7B7	7B7	8V	
5	3rd IF Amp.	7H7	7H7	8V	
6	FM Det.	FM1000	FM1000		
7A	Det.-AVC-AF	7B6	7B6	8W	
B	" " "	6SQ7GT	6SQ7GT	8Q	
8	Power Output	6V6GT	6V6GT	7AC	
9	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
10	15	450	30-2568-1	FP143	DY-20-450	EL-15	AF3J	UP4AJ18	Filter
11A	30	450	30-2570-1	FP444†	DY-3x20-450	EL-420†	AF444J	UP22245†	◓ "
B	10	450							▲ "
C	15	450							■ "
12A	10	450	30-2552	FP234	DY-2x20-450	EL-151	AF44J	UP6BJ38	▲ "
B	15	450							■ "
13A	.01	600	61-0120	TP410	MPH-6-01	TC-11	684-01	DT6S1	Line Filter
B	.01	600	61-0120	TP410	MPH-6-01	TC-11	684-01	DT6S1	" "
14	.003	1000	61-0117	TP457	S-6-003	TC-23	684-003	DT6D3	RF Bypass Pwr. Supply
15	.5	200	61-0133	TP431	SDH-4-5	TC-5	484-.5	DT4P5	Bias Filter
16	.006	1000	61-0153	TP460	S-6-006	TC-26	684-006	DT6D6	Output Plate Bypass
17	.006	600	45-3500-7	TP409	S-6-006	TC-26	684-006	DT6D6	Audio Coupling
18	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	Tone Compensation
19	.006	600	45-3500-7	TP409	S-6-006	TC-26	684-006	DT6D6	" "
20	.02	400	61-0108	TP423	S-4-02	TC-12	484-02	DT4S2	Audio Coupling
21	.006	600	61-0120	TP409	S-6-006	TC-26	684-006	DT6D6	Fil. Bypass
22	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	Screen Bypass
23	.03	400	45-3500-1	TP424	S-6-03	TC-13	484-03	DT4S3	Audio Coupling
24	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	RF Bypass
25	.006	600	45-3500-7	TP409	S-6-006	TC-26	684-006	DT6D6	Audio Coupling
26	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	RF Bypass
27	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	3rd IF Plate Decoup.
28	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	3rd IF Screen Bypass
29	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	3rd IF Cathode Bypass
30	.05	200	61-0122	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
31	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	RF Bypass Pwr. Supply
32	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	2nd IF Screen Bypass
33	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	2nd IF Plate Decoup.
34	.006	600	61-0120	TP409	S-6-006	TC-26	684-006	DT6D6	Fil. Bypass
35	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	2nd IF Cathode Bypass
36	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	AVC Filter
37	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	1st IF Plate Decoup.
38	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	1st IF Screen Bypass
39	.006	600	61-0120	TP409	S-6-006	TC-26	684-006	DT6D6	Fil. Bypass
40	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	IF Bypass ‡
41	.01	600	61-0120	TP410	S-6-01	TC-11	684-01	DT6S1	Conv. Plate Decoup.
42	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	AF Plate Bypass
43	33	500	66-00365307		MO.5-43	MS-43		5W5Q3	Osc. Grid
44	1500	300	60-20155404	MC256	MW.5-215	1FM-215	1467-0015	1W5D15	RF Bypass
45	100		60-10105407	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AVC Coupling Cer.
46	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Diode RF Filter Cer.
47	100		60-10105407	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Diode RF Filter Cer.
48	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	2nd IF Screen Bypass
49	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	1st IF Screen Bypass
50	285		30-1224-14						Osc. Feedback Cer.
51	485		30-1224-15						" " "
52	510	500	60-10515307	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	RF Bypass Pwr. Supply
53	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Osc. Plate Feedback
54	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	RF Filter

PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
55	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	" "
56	510	500	60-10515307	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	Osc. Plate Feedback
57	100	500	60-10105407	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Feedback
58	750	500	60-10755301						Osc. Coupling
59	255	500	60-10255307						Fixed Pad.
60	47	500	60-00515307	MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Coupling
61	510	500	60-10515307	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	FM RF Plate Decoup.
62	510	500	60-10515307	MC245	MO.5-35	1FM-35	1468-0005	5W5T5	FM RF Screen Bypass
63	220	500	60-10245307	MC237	MO.5-32	1FM-32	1468-0002	5W5T2	Fil. Bypass
64	10	500	60-00105407	MC215	MO.5-41	1FM-41	1468-00001	5W5Q1	RF Coupling
65	10	500	60-00105407	MC215	MO.5-41	1FM-41	1468-00001	5W5Q1	Neutralizing
66	255	500	60-10255307						Fixed Pad
67	22	500	60-00205307	MC220	MO.5-425	MS-425	1468-000025	5W5Q25	RF Coupling

†Parallel sections to obtain desired capacity. ‡ Wind turns on replacement as on original.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
68A	2 Meg.	½	33-5535-3	MRT451	D18-139X	T-116	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 68A per instructions
69A	500KΩ	½	33-5539-3	MR48	D13-133	M-60-Z	Treble Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 69A per instructions
70A	1 Meg.	½	33-5539-4	UM160			Bass Control
B	Shaft		Not Req.	SS1			Attach to 70A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: PHILCO PART No.	IRC PART No.	IDENTIFICATION CODES
71	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. FM-RF Grid
72	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. FM RF Screen Dropping
73	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. FM RF Plate Load
74	3300Ω	½	66-2333340	BTS-3300Ω	Or.-Or.-Red FM RF Decoupling
75	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
76	4.7 Meg.	½	66-5473340	BTS-4.7 Meg.	Yl.-Vi.-Grn. AVC Network
77	10Ω	½	66-0103340	BW-½-10	Br.-Blk.-Blk. Parasitic Suppressor
78	2200Ω	½	66-2223340	BTS-2200	Red-Red-Red Mixer Cathode
79	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. Oscillator Grid
80	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. Oscillator Plate Load
81	22KΩ	½	66-3223340	BTS-22K	Red-Red-Or. Converter Plate Load
82	100Ω	½	66-1103340	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
83	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. Oscillator Cathode
84	10KΩ	½	66-3103340	BTS-10K	Br.-Blk.-Or. Oscillator Cathode
85	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Oscillator Plate Decoupling
86	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
87	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. " "
88	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. AVC Network
89	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Brn. 1st IF Cathode
90	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. 1st IF Screen Dropping
91	3300Ω	½	66-2333340	BTS-3300	Or.-Or.-Red 1st IF Plate Decoupling
92	180Ω	½	66-1183340	BTS-180	Br.-Gray-Br. 2nd IF Cathode
93	2200Ω	½	66-2223340	BTS-2200	Red-Red-Red 2nd IF Cathode-See Note 1
94	3300Ω	½	66-2333340	BTS-3300	Or.-Or.-Red 2nd IF Plate Decoupling
95	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. 2nd IF Screen Bleeder
96	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. 2nd IF Screen Dropping
97	100Ω	½	66-1103340	BW-½-100	Br.-Blk.-Br. Parasitic Suppressor
98	180Ω	½	66-1183340	BW-½-180	Br.-Gray-Br. 3rd IF Cathode

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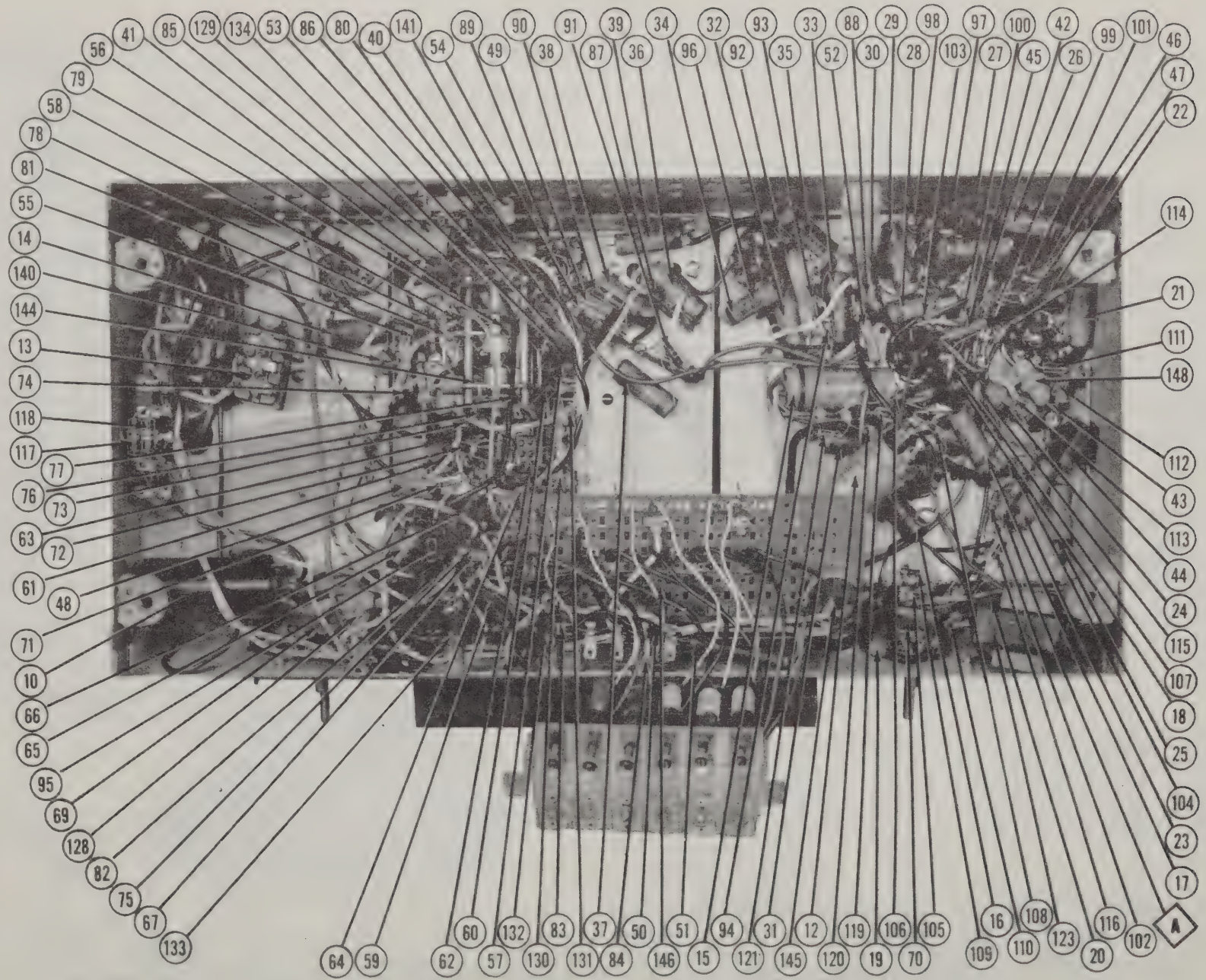
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PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	PHILCO PART No.	IRC PART No.	
99	3300Ω	½	66-2333340	BTS-3300	Or.-Or.-Red 3rd IF Plate Decoupling
100	82KΩ	½	66-3823340	BTS-82K	Gray-Red-Or. 3rd IF Screen Dropping
101	47KΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. Diode RF Filter
102	270KΩ	½	66-4273340	BTS-270K	Red-Vi.-Yl. Diode Load
103	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
104	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Tone Compensation
105	4.7Ω	1	66-9474360	BW-1-4.7	Yl.-Vi.-Gold Feedback
106	1 Meg.	½	66-5103340	BTS-1 Meg.	Br.-Blk.-Grn. AF Grid
107	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. AF Plate Load
108	330KΩ	½	66-4333340	BTS-330K	Or.-Or.-Yl. Output Grid
109	100Ω	½	66-1103340	BW-½-100	Br.-Blk.-Br. Feedback
110	33KΩ	½	66-3333340	BTS-33K	Or.-Or.-Or. Tone Compensation
111	22Ω	½	60-0223340	BW-½-22	Red-Red-Blk. Parasitic Suppressor
112	15KΩ	½	66-3153340	BTS-15K	Br.-Grn.-Or. FM Detector Grid
113	47KΩΩ	½	66-3473340	BTS-47K	Yl.-Vi.-Or. FM Detector Plate Decoupling
114	56KΩ	½	66-3563340	BTS-56K	Grn.-Blue-Or. FM Detector Screen Dropping
115	15KΩ	½	66-3153340	BTS-15K	Br.-Grn.-Or. FM Detector Decoupling
116	100KΩ	½	66-4103340	BTS-100K	Br.-Blk.-Yl. Tone Compensation
117	18KΩ	1	66-3184340	BTA-18K	Br.-Gray-Or. Decoupling
118	15KΩ	1	66-3154340	BTA-15K	Br.-Grn.-Or. Decoupling
119	560KΩ	½	66-4563340	BTS-560K	Grn.-Blue-Yl. Bias Network
120	220KΩ	½	66-4223340	BTS-220K	Red-Red-Yl. Bias Network
121	18KΩ	½	66-3183340	BTS-18K	Br.-Gray-Or. " "

Note 1-Some models use 3300Ω in this application. IRC replacement same as Item 94.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	PHILCO PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
122	117V AC @ .6A	580V CT @ .075A	5.0V AC @ 2.0A	6.1V AC @ 3.0A	32-8281	P-4078*	T22R31*	P-3151*

*Drill new mounting holes and add series resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		PHILCO PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
123	41000Ω	3.3Ω	4855Ω	.9Ω	32-8249	A-3823	T22887	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			PHILCO PART No.	JENSEN PART No.		
124	FIELD RES. 600Ω	VC IMP. 3.3Ω	36-1608			
125	CONE DIA. 4-7/8" x 7-1/8"	VC DIA. 3/4"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	PHILCO PART No.	MEISSNER PART No.	
126	Loop Ant.		0Ω	76-2237		
127	FM Ant.					
128	BC Ant.Coil		1.5Ω	32-4049		
129	SW Ant.Coil		.1Ω	32-4050		
130	FM Ant.Coil		0Ω	32-3993		
131	FM RF Coil		0Ω	32-3992		
132	BC Osc.Coil		3.5Ω	32-4019-2	14-1040	
133	SW Osc.Coil		.1Ω	32-3996		
134	FM Osc.Coil		0Ω	32-3994		
135A	AM 1st IF	1.2Ω	20Ω	32-4020-1		Items 135A & 135B in same can
B	FM " "	1Ω	1.2Ω			
136A	AM 2nd IF	1.2Ω	6.5Ω#	32-4001		Items 136A & 136B in same can
B	FM 2nd IF					
137A	AM 3rd IF	10Ω$	14Ω#	32-4002		Items 137A & 137B in same can
B	FM 3rd IF					
138A	AM 4th IF	6Ω$	9Ω	32-4003-2		
B	FM 4th IF		.3Ω			
139	FM Det.Trans	1Ω		32-4004		
140	RF Choke		0Ω	32-4089		
141	" "		.1Ω	32-4111		
142	" "		9Ω	32-3352		

$Includes both pri. #Includes both sec.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					PHILCO PART No.		
142	Bayonet	7.5	0.2A	White	34-2040		Type 51
143	"	"	"	"	34-2040		"

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
144	Band Switch	76-2211	
145	On-Off Switch	42-1714	
146	Pushbutton Assy.	42-1774	(Includes on-off switch)
147	Tuning Cap.	31-2694	AM (18-520 MMF, 18-520 MMF)
A7	Trimmer Strip	31-6477	SW Osc. Adj.
A9			BC Osc. Adj.
A10			BC Ant. Adj.
A8	Trimmer	31-6473-2	SW Ant. Adj.
A11	Padder	31-6473-3	BC Osc. Adj.
	Dial Pointer	56-3179-2	

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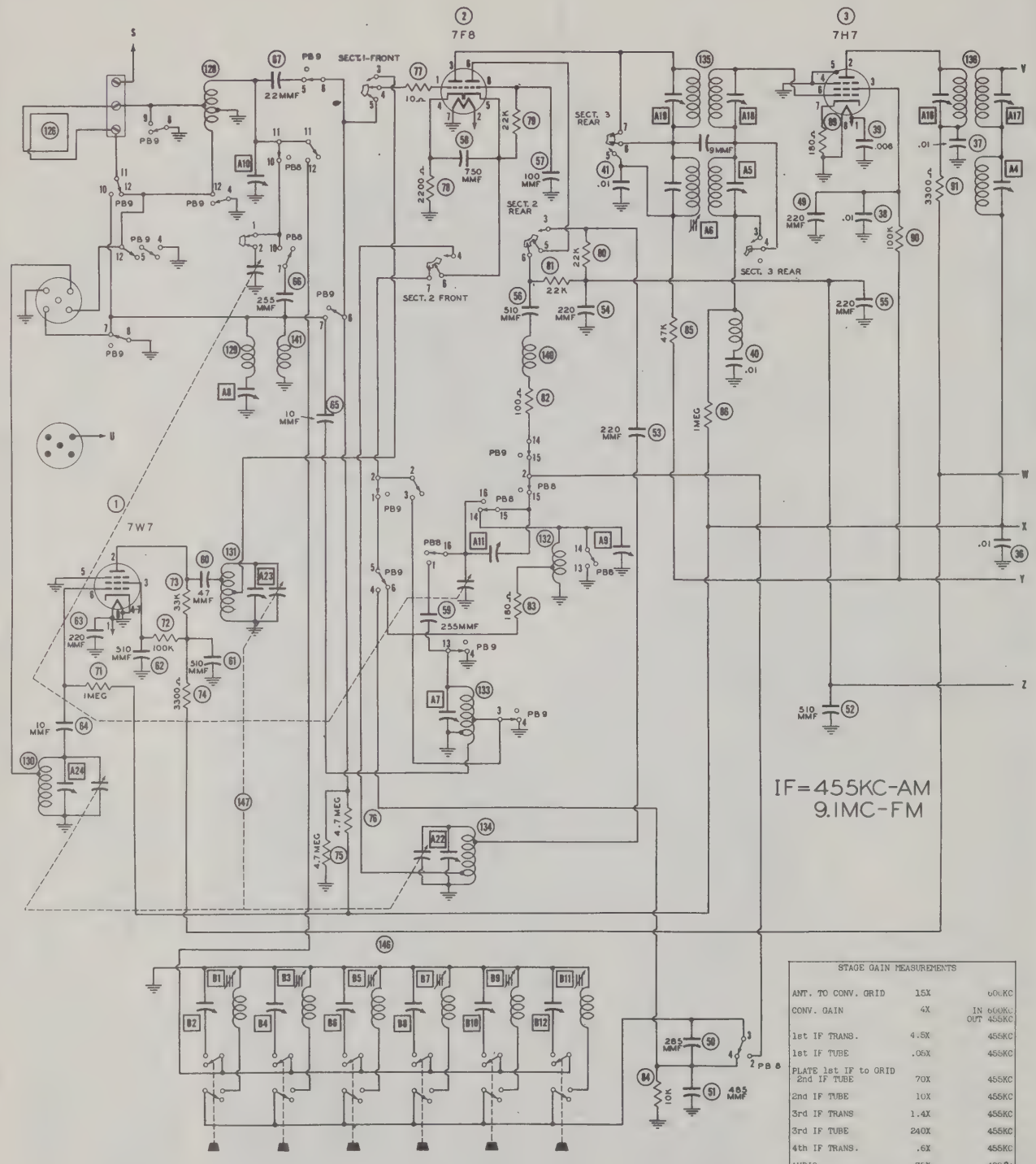

STAGE GAIN MEASUREMENTS		
ANT. TO CONV. GRID	15X	600KC
CONV. GAIN	4X	IN 600KC OUT 455KC
1st IF TRANS.	4.5X	455KC
1st IF TUBE	.06X	455KC
PLATE 1st IF to GRID 2nd IF TUBE	70X	455KC
2nd IF TUBE	10X	455KC
3rd IF TRANS	1.4X	455KC
3rd IF TUBE	240X	455KC
4th IF TRANS.	.6X	455KC
AUDIO	35X	400~
OUTPUT	18X	400~

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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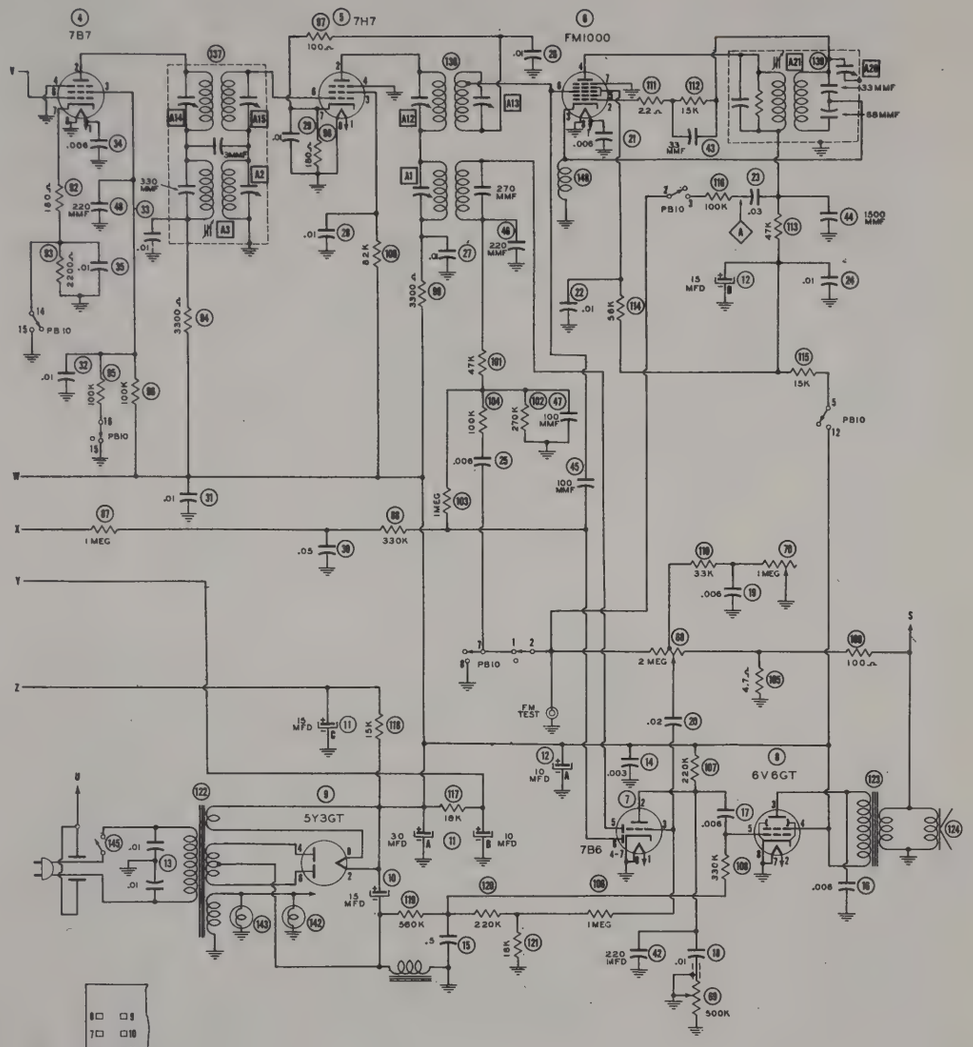
4720-24

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



BANDSWITCH LUG IDENTIFICATION

BANDSWITCH SHOWN IN BROADCAST POSITION.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4720-24

VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	7W7	6.1VAC	108VDC	55VDC	0V.	0V.	-.6VDC	0V.	0V.
	2	7F8	-.1VDC	6.1VAC	138VDC	3.2VDC	.8VDC	130VDC	0V.	-2.6VDC§
	3	7H7	6.1VAC	250VDC	95VDC	0V.	0V.	0V.	.9VDC	0V.
	4	7B7	6.1VAC	260VDC	115VDC	0V.	0V.	-.2VDC	8VDC	0V.
	5	7H7	6.1VAC	250VDC	108VDC	0V.	0V.	0V.	1.6VDC	0V.
‡	6	FM1000	6.1VAC	-.3VDC	0V.	215VDC	48VDC	1.6VDC	0V.	0V.
	7	7B6	6.1VAC	111VDC	-.6VDC	0V.	-.5VDC	-.23VDC	0V.	0V.
	8	6V6GT	0V.	6.1VAC	250VDC	265VDC	-10VDC	INF.	0V.	0V.
	9	5Y3GT	6.1VAC	265VDC	0V.	290VAC	0V.	250VAC	6.1VDC	265VDC

RESISTANCE READINGS

	Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
‡	1	7W7	.1Ω	135KΩ	205KΩ	0Ω	0Ω	3.2 Meg.	0Ω	0Ω
	2	7F8	12Ω	.1Ω	170KΩ	2KΩ	180Ω	140KΩ	0Ω	22KΩ
	3	7H7	.1Ω	105KΩ	220KΩ	0Ω	0Ω	3.5 Meg.	200Ω	0Ω
	4	7B7	.1Ω	105KΩ	200KΩ	0Ω	0Ω	2.5 Meg.	27KΩ	0Ω
	5	7H7	.1Ω	105KΩ	180KΩ	0Ω	0Ω	15Ω	190Ω	0Ω
‡	6	FM1000	.1Ω	15KΩ	8Ω	160KΩ	120KΩ	300Ω	0Ω	0Ω
	7	7B6	.1Ω	320KΩ	1.2 Meg.	0Ω	1.2 Meg	280KΩ	0Ω	0Ω
	8	6V6GT	0Ω	.1Ω	100KΩ	100KΩ	560KΩ	INF.	0Ω	0Ω
	9	5Y3GT	.1Ω	100KΩ	INF.	700Ω	INF.	710Ω	.1Ω	100KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

‡ VOLTAGE AND RESISTANCE READINGS TAKEN IN FM POSITION.

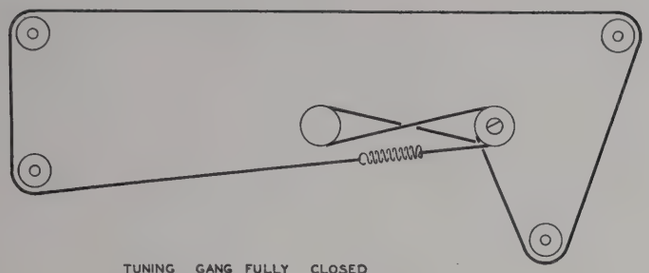
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PUSHBUTTON ADJUSTMENTS

Ranges of pushbuttons reading from left to right are 540-1000KC, 600-1200KC, 650-1300KC, 850-1500KC, 900-1600KC, 900-1600KC.

1. Make up a list of stations desired to be set up ranging from low to high frequency stations, making certain each station falls within range of its button.
2. Push in button next to off button and allow receiver to warm up for about 15 minutes.
3. Adjust B1 to tune in first station on list. Check for correct station by pushing in BC button and manually tune in desired station.
4. Returning to original button adjust B2 for maximum volume.
5. Set up the remaining buttons by following the same procedure outlined above adjusting B3, B5, B7, B9 & B11 to tune in stations, and B4, B6, B8, B10 and B12 for maximum volume.



TUNING GANG FULLY CLOSED

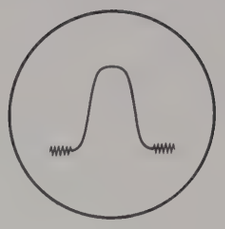
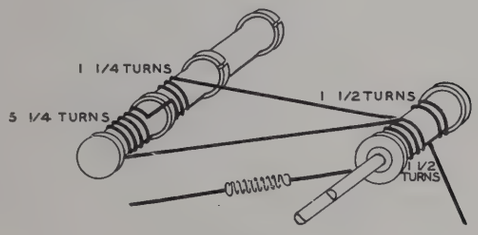


FIG. A



DIAL CORD DRIVE

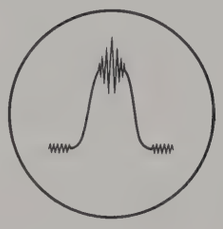


FIG. B

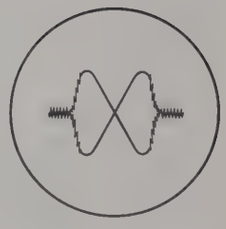


FIG. C

SCOPE PATTERNS

FM ALIGNMENT

In Step 19 of output meter alignment and Step 16 of scope alignment connect a dipole to Pins 1 & 2 of FM Ant. Socket. Connect a dipole to output of signal generator and space the two dipoles several feet apart. Each dipole may consist of two 30 inch lenths of wire.

FM ALIGNMENT USING AM SIGNAL GENERATOR AND OUTPUT METER

Load network consists of 4700Ω resistor in series with .1 MFD cap. In Step 7 it will be necessary to force a piece of wire or solder down between ceramic form of A13 and edge of trimmer plate. Then attach the load to this wire and chassis.

In Steps 17 & 20 use a tuning wand to adjust FM coils. If output increases when brass end of wand is inserted in coil expand coil slightly. If output increases upon insertion of powdered iron end compress coil slightly. Coil is properly adjusted when upon insertion of either end of wand causes a decrease in output.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
7	.1 MFD.	High side to switch tap of FM RF Coil (131) Low side to chassis.	9.1MC (modulated)	FM	Tuning cap. fully closed	"	A12	Ground Pin 2 of FM1000 Tube to chassis. Connect load network (See pre-alignment notes). From high side of secondary of FM 4th trans. (138B). to chassis. Adjust for maximum output.
8	.1 MFD.	"	"	"	"	"	A13	Connect network from Pin 2 (Plate) 7A7 3rd IF Tube (5) to chassis. Adjust A13 for maximum output.
9	.1 MFD.	"	"	"	"	"	A14	Connect network from Pin 6 (grid) 7H7 3rd IF Tube (5) to chassis. Adjust A14 for maximum output.
10	.1 MFD.	"	"	"	"	"	A15	Connect network from Pin 2 (plate 7B7 2nd IF Tube (4) to chassis. Adjust A15 for maximum output.
11	.1 MFD.	"	"	"	"	"	A16	Connect network from Pin 6 (grid) 7B7 2nd IF Tube (4) to chassis. Adjust A16 for maximum output.
12	.1 MFD.	"	"	"	"	"	A17	Connect network from Pin 2 (plate) 7H7 1st IF Tube (3) to chassis. Adjust A17 for maximum output.
13	.1 MFD.	"	"	"	"	"	A18, A19	Leave network as in last step, adjust A18, A19 for maximum output. Remove short from Pin 2 of FM 1000 Tube, remove loading network.
14	.1 MFD.	High side to Pin 6 (grid) 7H7 1st IF Tube (3). Low side to chassis.	9.1MC (unmodulated)	"	"	"	A20	Connect jumper from Pin 4 (plate) FM1000 tube to junction of resistor 113 and capacitors 23 & 44. Adjust A20 for zero beat.
15	.1 MFD.	"	"	"	"	"	A21	Remove jumper from previous step and adjust A21 for zero beat.
16	.1 MFD.	High side to Pin 2 (yellow lead) of FM AC line aerial socket. Low side to chassis.	105MC (modulated)	"	8-5/8" from left end of dial back-plate.	"	A22	Connect short from Pin 2 of FM1000 tube to chassis. Adjust A22 for maximum output.
17	.1 MFD.	"	88MC	"	3-1/2" from left edge of dial back-plate.	"	FM Osc. Coil (134)	Adjust per pre-alignment notes. Repeat Steps 16 & 17 until no further improvement can be made.
18	.1 MFD.	"	105MC	"	Tune for maximum output.	"	A23	Rock tuning cap. and adjust for maximum output.
19	Dipole	See pre-alignment notes.	"	"	"	"	A24	Rock tuning cap. and adjust for maximum output.
20	Dipole	"	92MC	"	"	"	FM RF Coil (131) & Ant. Coil (130)	Adjust per pre-alignment notes. Repeat Steps 18, 19 & 20 until no further improvement can be made.

FM ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Frequency modulate signal with 60∿, 450KC sweep. Use 120∿ sawtooth voltage for horizintal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7	.1 MFD.	High side to Pin 6 (grid) 7H7 3rd IF Tube (5). Low side to chassis.	9.1MC (Freq. mod.)	FM	Tuning cap. fully closed	Vertical amp. to Point A. Ground to chassis.	A12, A13	Short Pin 2 of FM 1000 Tube to chassis. Short Pin 4 of FM 1000 tube to junction of cap. (23 & 44) and resistor (113). Adjust A12 & A13 for maximum amplitude, symmetry and coincidence of Pattern per Fig. A.
8	.1 MFD.	High side to Pin 6 (grid) 7B7 2nd IF Tube. Low side to chassis.	"	"	"	"	A14, A15	Adjust for maximum amplitude, symmetry & coincidence.
9	.1 MFD.	High side to Pin 6 (grid) 7H7 1st IF Tube (3). Low side to chassis.	"	"	"	"	A16, A17	"
10	.1 MFD.	High side to Pin 1 (grid) 7F8. Low side to chassis.	"	"	"	"	A18, A19	Adjust for maximum amplitude, symmetry & coincidence. Remove only the short from Pin 2 of FM 1000 Tube.
11	.1 MFD.	"	Adjust freq. for coincidence of Pattern	"	"	"	A20	Adjust for coincidence of two pips at peak of Pattern per Fig. B. Remove short from Pin 4 of FM1000 Tube.
12	.1 MFD.	"	Leave at exact setting of previous Step.	"	"	"	A21	Adjust for crossover of Pattern at horizontal sweep line per Fig. C.
13	.1 MFD.	High side to Pin 2 (yellow socket) of FM AC line aerial socket. Low side to chassis.	105MC (freq. mod.)	"	8-5/8" from left edge of dial back-plate.	"	A22	Short Pin 2 of FM1000 Tube to chassis. Adjust for coincidence of peaks per pattern of Fig. A.
14	.1 MFD.	"	88MC (freq. Mod.)	"	3-1/2" from left edge of dial back-plate.	"	FM Osc Coil (134)	Compress or expand osc. coil slightly for coincidence of peaks per Pattern of Fig. A. Repeat Steps 13 & 14 until no further improvement can be made.
15	.1 MFD.	"	105MC	"	Tune for coincidence.	"	A23	Rock tuning cap. for coincidence while adjusting A23 for maximum amplitude of Pattern of Fig. A.
16	Dipole	See Prealignment Note.	"	"	"	"	A24	Rock tuning cap. for coincidence and adjust A24 for maximum amplitude of Pattern of Fig. A.
17	Dipole	"	66MC	"	"	"	FM RF Coil (131) ant. coil (130)	Compress or expand coils slightly for maximum amplitude of Pattern of Fig. A. Repeat Steps 16 & 17 until no further improvement can be made. Remove short from Pin 2 of FM1000 tube.

FOR AM ALIGNMENT SEE FRONT PAGE

CHANCELLOR MODEL 35P
BATTERY-LINE OPERATED

CHANCELLOR MODEL 35P
BATTERY-LINE OPERATED

CHANCELLOR MODEL 35P

TRADE NAME	Chancellor, Model 35P
MANUFACTURER	Radionic Equipment Co., 170 Nassau St., N.Y. 7, N.Y.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	Types, 1R5 Converter, 1T4 IF Amp., 1S5 Det.-AVC-AF, 3Q4 Power Output
POWER SUPPLY	110-120 Volts AC-DC or 7½ Volt "A" Supply & 90 Volt "B" Supply
RATING	.160 Amp. @ 117 Volts AC or 51 MA @ 7.5 Volts DC & 15 MA @ 90 Volts DC
TUNING RANGE--BROADCAST	540-1600KC

ALIGNMENT INSTRUCTIONS--READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer parallel with base of dial. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with the low side of the signal generator and B-. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to stator of rear section of tuning capacitor. Low side to chassis.	456KC	Tuning capacitor fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200 MMF to reduce hum modulation.
2		Loop	1500KC	Second mark from left end of dial backplate.	"	A5	Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A6	" " " "

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DATE 12/47 SET #30 FOLDER #4720-25

PARTS LIST AND DESCRIPTIONS

CHANCELLOR MODEL 35P
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: CHANCELLOR PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1R5	1R5	7AT	
2	IF Amp.	1T4	1T4	6AR	
3	Det.-AVC-AF	1S5	1S5	6AU	
4	Power Output	3Q4	3Q4	7BA	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: CHANCELLOR PART No.	MALLORY PART No.	CORNELL-DUBILIER PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	60	150			UP5515	DY-804020-150	EL-26		■ Filter
B	60	150							▲ "
C	25	50			BR255		TA-525		Fil. Bypass
6	25	25		TC26	BR252A	M-25-25	TA-25	PRS25-25	Fil. Bypass
7	.05	200		TP426	DT4S5	MPH-4-05	TC-15	484-05	Line Filter
8	.005	400		TP408	DT6D5	S-6-005	TC-25	484-005	Output Plate Bypass
9	.1	200		TP428	DT4P1	S-4-1	TC-1	484-.1	Fil. Bypass
10	.001	400		TP404	DT6D1	S-6-001	TC-21	484-001	Audio Coupling
11	.02	200		TP423	DT4S2	S-4-02	TC-12	484-02	AF Plate Decoup.
12	.02	400		TP423	DT4S2	S-4-02	TC-12	484-02	AF Screen Bypass
13	.005	400		TP408	DT6D5	S-6-005	TC-25	484-005	Audio Coupling
14	.02	400		TP423	DT4S2	S-4-02	TC-12	484-02	AVC Filter
15	.05	200		TP426	DT4S5	S-4-05	TC-15	484-05	Fil. Bypass
16	.001	400		TP404	DT6D1	S-6-001	TC-21	484-001	Ext. Ant. Isolation
17	.02	400		TP423	DT4S2	S-4-02	TC-12	484-02	Osc. Anode Decoup.
18	100	500		MC235	5W5T1	MO.5-31	1FM-31	1468-0001	AF Plate Bypass
19	100	500		MC235	5W5T1	MO.5-31	1FM-31	1468-0001	Diode Filter
20	11	500		MCE215	5R591	MOS.5-41	MS-41	1469-00001	Fixed Trimmer*

*Not used in all models.

CONTROLS

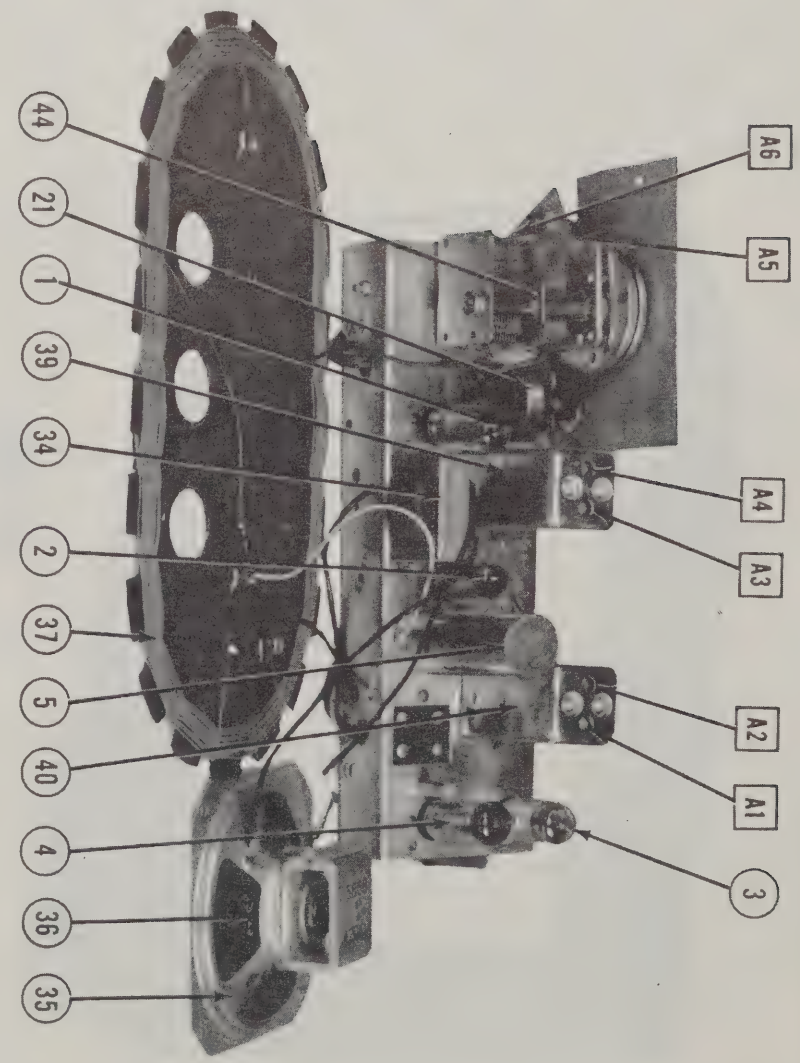
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHANCELLOR PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
21A	1 Meg.	1	2481	MR53	D13-137	M-63-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 21A per instructions
C	Switch		" "	M-27	42	SW-2A	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: CHANCELLOR PART No.	IRC PART No.	IDENTIFICATION CODES
22	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Oscillator Grid
23	8200Ω	½		BTS-8200	Gray-Red-Red Voltage Dropping
24	3.3 Meg.	½		BTS-3.3 Meg.	Or.-Or.-Grn. AVC Network
25	10 Meg.	½		BTS-10 Meg.	Br.-Blk.-Blue AF Grid
26	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Screen Dropping
27	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
28	330KΩ	½		BTS-330K	Or.-Or.-Yl. AF Plate Decoupling
29	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Output Grid
30	270Ω	½		BW-½-270	Red-Vi.-Br. Filament String
31	820Ω	½		BTS-820	Gray-Red-Br. Filament String
32A	660Ω	10	2177A	ABA-750	Filter - See Note
B	1500Ω			AB-1500	Filament String
33	33Ω	1		BW-1-33	Or.-Or.-Blk. Rectifier Ballast

Note-On IRC replacement set slider at 660Ω from one end.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		CHANCELLOR PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
34	8300Ω	3.3Ω	310Ω	.5Ω	1337	A-3878	T22S47	A-2832	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			CHANCELLOR PART No.	JENSEN PART No.		
35	FIELD	VC IMP.	5868	ST-113 Mod. P4-X		
	PM	3.3Ω				
36	CONE DIA. 4"	VC DIA. 1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

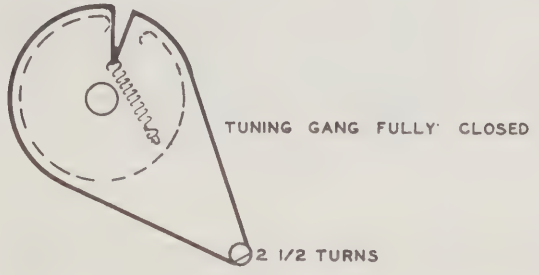
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	CHANCELLOR PART No.	MEISSNER PART No.	
37	Loop Ant.	.1Ω	1.5Ω	28190		
38	Osc. Coil	1.5Ω	6Ω	28197	14-1040	
39	Input IF	21Ω	21Ω	3371	16-6658	
40	Output IF	30Ω	31Ω	3535	16-6660	

BATTERIES

ITEM No.	VOLTAGE	CHANCELLOR PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
41	7.5V "A" 90V "B"				#753	

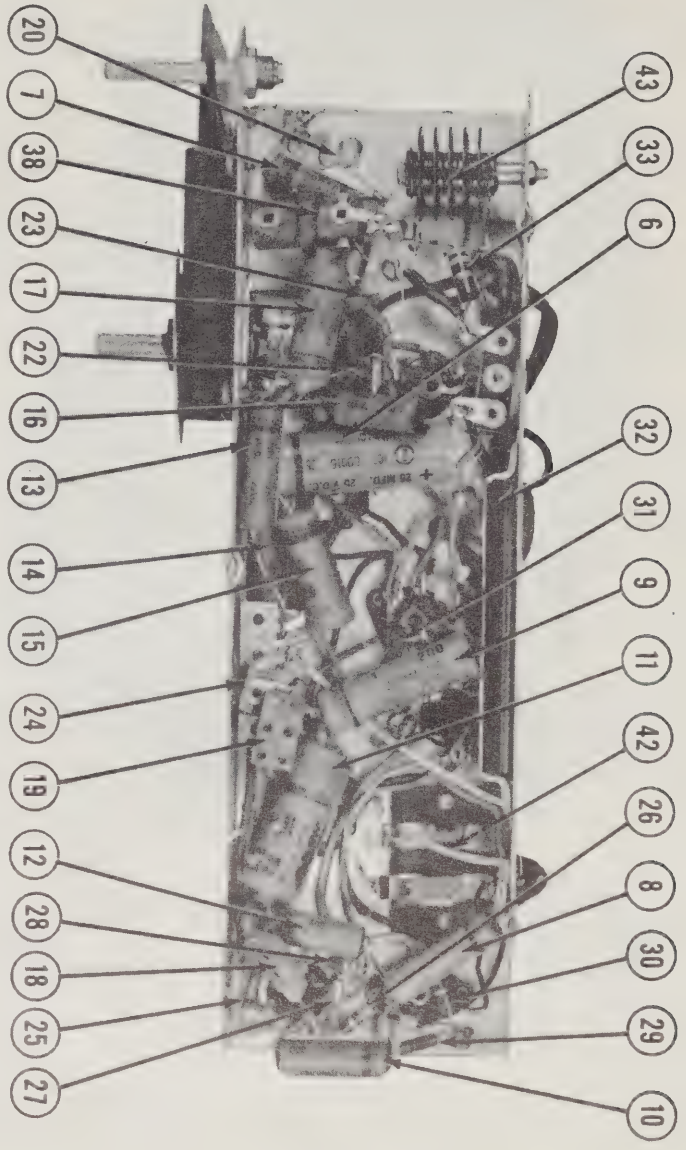
MISCELLANEOUS

ITEM No.	PART NAME	CHANCELLOR PART No.	NOTES
42	Switch	18132	Power Change-Over
43	Rectifier		Selenium
44	2 Gang Var. Cap	1694	23-460 MMF, 17-188 MMF



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



CHANCELLOR MODEL 35P
BATTERY-LINE OPERATED

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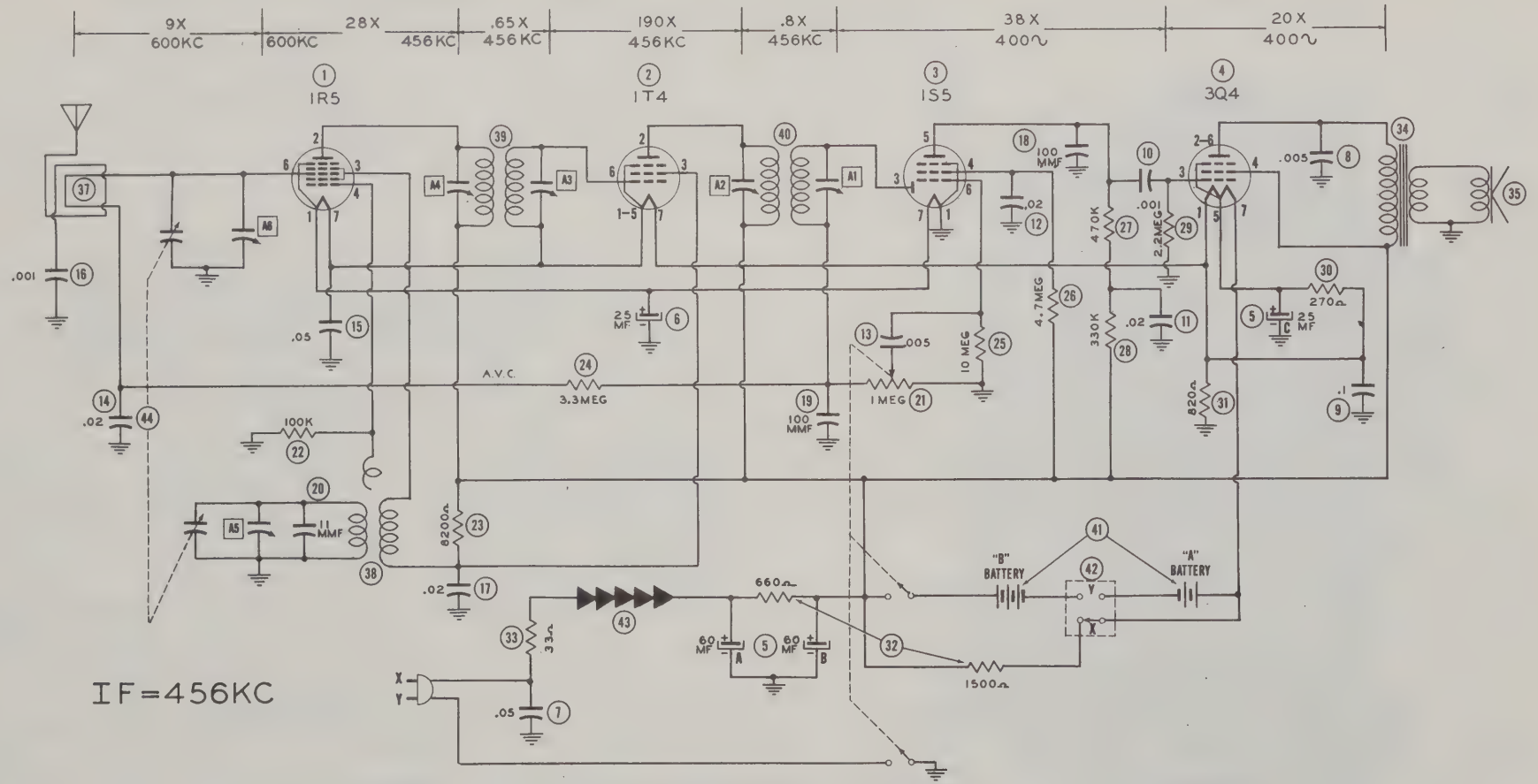
BATTERY-LINE OPERATED



VOLTAGE READINGS

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	1.7VDC	80VDC	57VDC	-4VDC§	1.7VDC	0V.	3.2VDC
2	1T4	3.2VDC	80VDC	80VDC	80VDC	3.2VDC	3.2VDC	4.6VDC
3	1S5	0V.	53VDC	-.2VDC	24VDC	22VDC	0V.	1.7VDC
4	3Q4	4.6VDC	77VDC	0V.	80VDC	5.8VDC	77VDC	7.2VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
1	1R5	*	1400Ω	9600Ω	105KΩ	*	4.5 MEG.	*
2	1T4	*	1400Ω	1400Ω	1400Ω	*	50Ω	*
3	1S5	0Ω	330KΩ	860KΩ	4.7 MEG.	800KΩ	10 MEG.	*
4	3Q4	*	2KΩ	2 MEG.	1400Ω	*	2KΩ	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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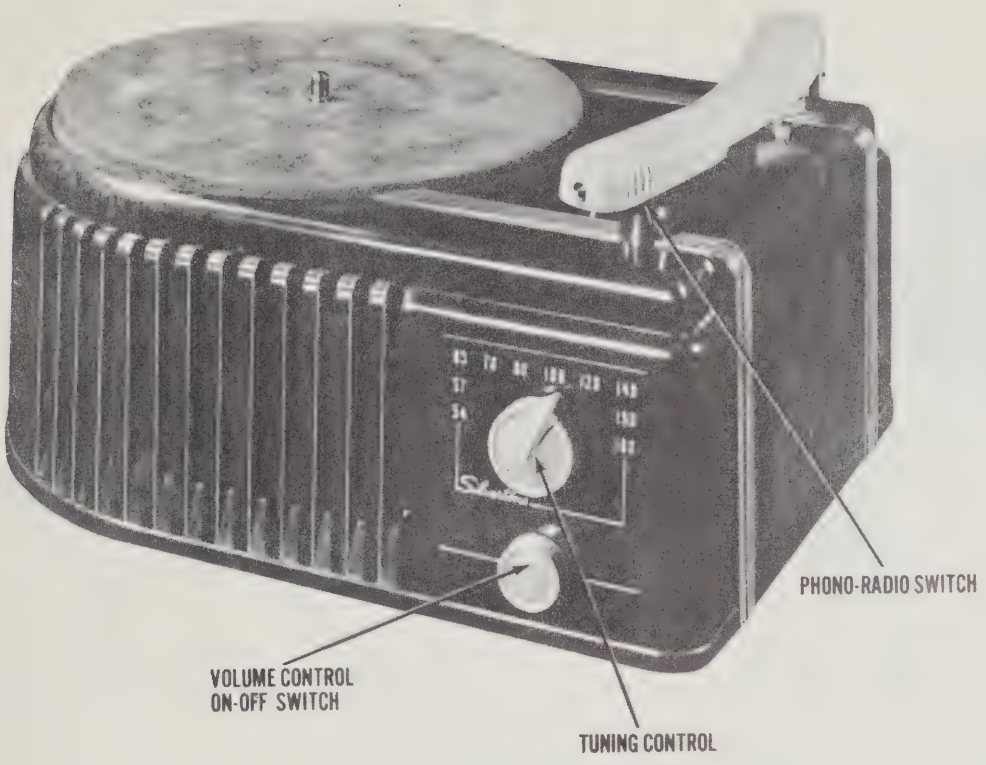
RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-25

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is shorted to chassis during stage gain measurements.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODEL
7070 (Ch. 101.817)



SILVERTONE MODEL
7070 (Ch. 101.817)

SILVERTONE MODEL 7070 (Ch. 101.817)

TRADE NAME	Silvertone, Model 7070 (Ch. 101.817)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Combination Phono-Radio Superheterodyne Receiver with Loop Antenna
TUBES (FIVE)	Types, 14Q7 Converter, 14A7 IF Amp., 7C6 Det.-AVC-AF, 50A5 Power Output, 35Y4 Rectifier.
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	535-1650KC RATING .240 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 14Q7. Low side to B-.	455KC	Tuning cap. fully open.	Across voice coil	A1, A2, A3	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMF.	High side to ext. ant. lead. Low side to ext. ground lead.	1650KC	"	"	A4	Adjust for maximum output. Trimmer opposite A4 is a factory adjustment and need not be changed unless receiver cannot be calibrated with A4.
3	200MMF.	"	1410KC	Tune for maximum output.	"	A5	Adjust for maximum output.

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PARTS LIST AND DESCRIPTIONS

SILVERTONE MODEL 7070 (Ch. 101.817)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	Converter	14Q7	14Q7	8AL	
2	IF Amp.	14A7	14A7	8V	
3	Det.-AVC-AF	7C6	7C6	8W	
4	Power Output	50A5	50A5	6AA	
5	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150	R61683	TN129	DSB-303	TA-240	PRSA150-40-20	E24215C	Filter - Red
B	20	150							" - Blue
C	20	25				TA-25	PRS25-25		Cathode Bypass-Grn.
7	.05	600		TP415	MPH-6-05	TC-15	684-05	DT6S5	Line Filter
8	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	Output Plate Bypass
9	.002	600		TP405	S-6-002	TC-22	684-002	DT6L2	Audio Coupling
10	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	" "
11	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supp.
13	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Line Isolation
14	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Tuning Cap. Isolation

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
15A	500KΩ	2	R61684	MR48	D13-133	M-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 15A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

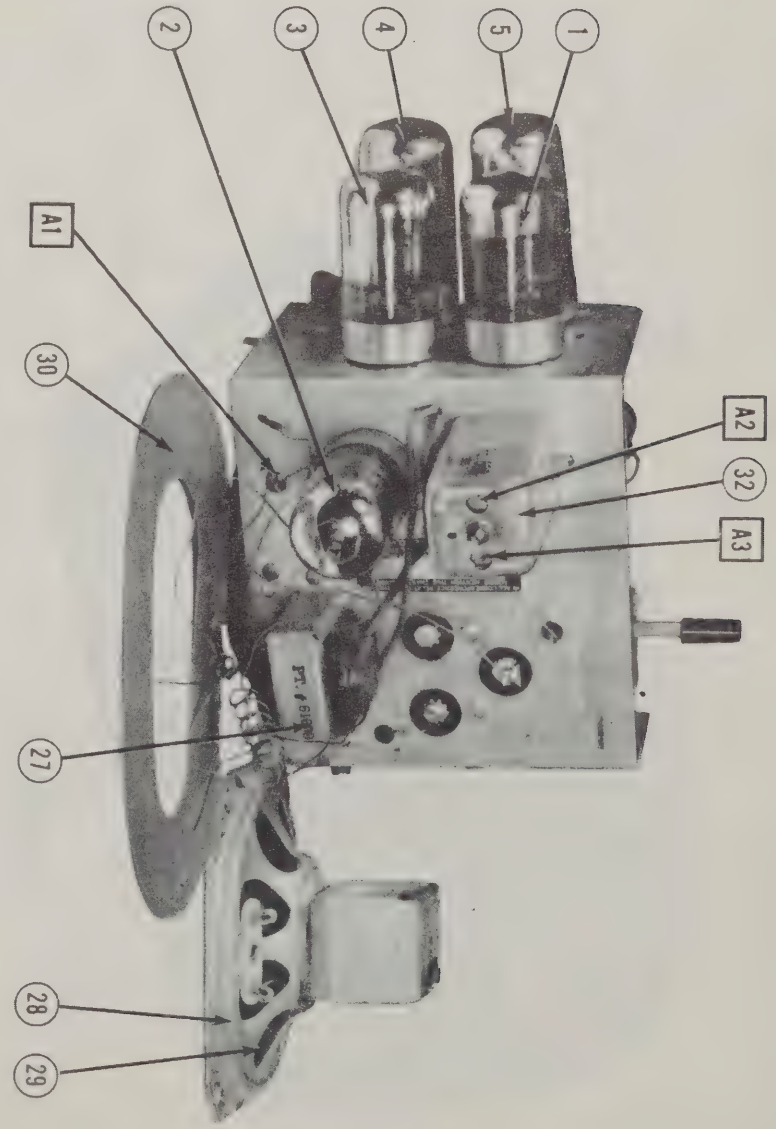
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
16	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
17	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
18	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
19	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Diode RF Filter
20	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
21	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AF Plate Load
22	220KΩ	½		BTS-220K	Red-Red-Yl. Tone Compensation
23	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
24	100Ω	½		BW-½-100	Br.-Blk.-Br. Output Cathode
25	2200Ω	1		BTA-2200	Red-Red-Red Filter
26	25Ω	1		BW-1-27	Red-Grn.-Blk. Surge Limiter

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
27	1850Ω	3.7Ω	165Ω	.5Ω	R61699	A-3876	T22S45	A-2923	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: JENSEN PART No.		INSTALLATION NOTES
	FIELD	VC IMP.		ST-113		
28	PM	3.7Ω	R61693	Mod. P4-X		
	CONE DIA.	VC DIA.				
29	4"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
30	Loop Ant.	2.1Ω	.1Ω	R61415	
31	Osc. Coil		12Ω	R61697	14-1040
32	Input IF	24Ω	21Ω	R61688	16-6666
33	Output IF	13Ω	19.5Ω	R61689	

PHONO ARM AND CARTRIDGE

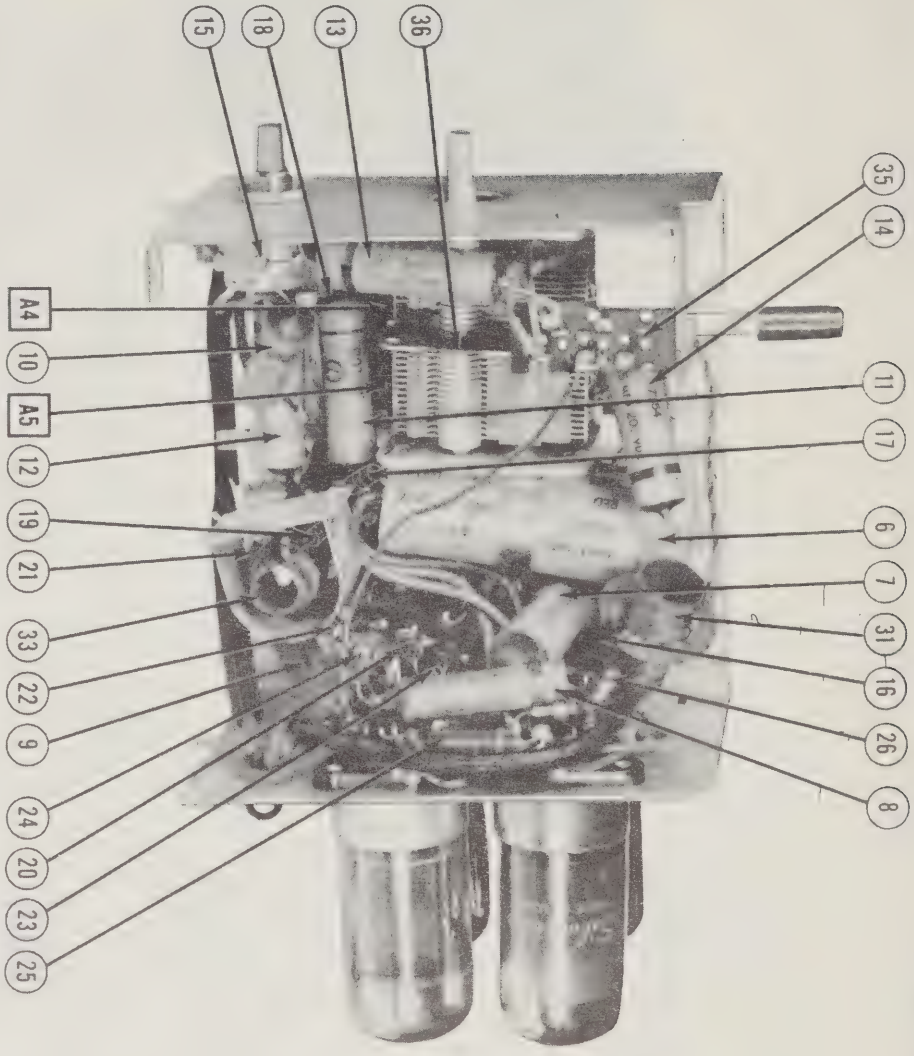
ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
34A	R62212		Pickup Arm
B	R52826	L-70-A	Cartridge

34A & B may be obtained as Unit. Part #R62208.

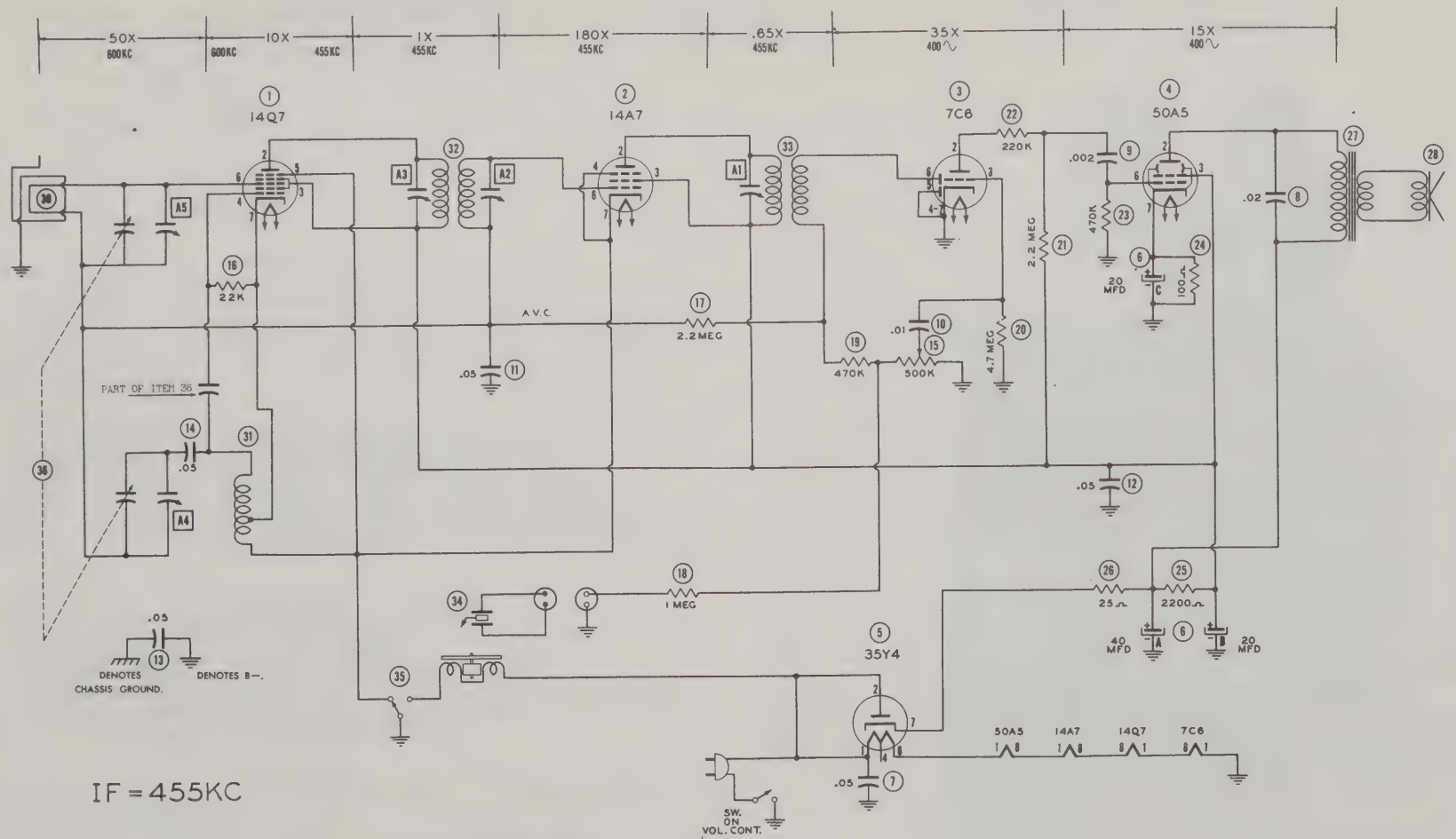
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
35	Switch	R61687	Phono-Radio
36	2 Gang Var. Cap.	R61682	(30-464 MMF, 22-143 MMF)
A1	Trimmer	R62282	Output IF Adj.

CHASSIS—BOTTOM VIEW



SILVERTONE MODEL 7070 (Ch. 101.817)



IF = 455KC

VOLTAGE AND RESISTANCE READINGS TAKEN WITH RADIO-PHONO SWITCH IN RADIO POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	7VAC	73VDC	73VDC	-10VDC§	0V.	-.4VDC	0V.	19VAC
2	14A7	32VAC	73VDC	73VDC	0V.	0V.	-.4VDC	0V.	19VAC
3	7C6	0V.	28VDC	-.5VDC	0V.	-.5VDC	0V.	0V.	7VAC
4	50A5	84VAC	121VDC	73VDC	117VAC	0V.	0V.	4.1VDC	32VAC
5	35Y4	117VAC	117VAC	127VDC	110VAC	0V.	127VDC	128VDC	84VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	7Ω	160KΩ	160KΩ	22KΩ	0Ω	3.5 Meg.	1Ω	20Ω
2	14A7	33Ω	160KΩ	160KΩ	0Ω	0Ω	3.5 Meg.	0Ω	20Ω
3	7C6	0Ω	2.6 Meg.	5 Meg.	0Ω	900KΩ	0Ω	0Ω	7Ω
4	50A5	80Ω	160KΩ	160KΩ	112Ω	INF.	470KΩ	110Ω	33Ω
5	35Y4	112Ω	112Ω	160KΩ	105Ω	INF.	160KΩ	160KΩ	80Ω

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

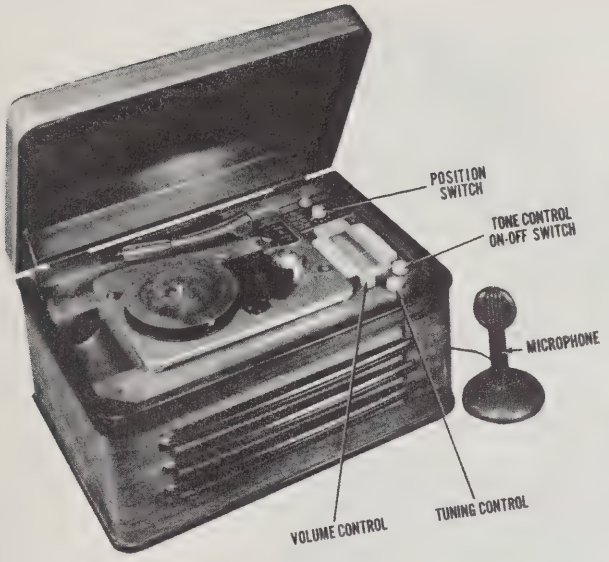
4720-26

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

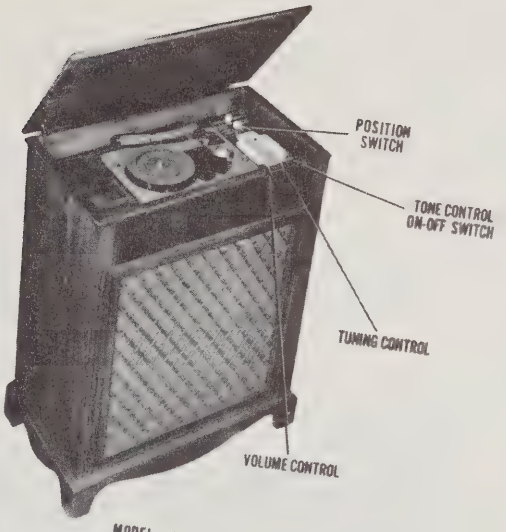
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SILVERTONE MODELS 7085 (Ch. 101.814) 7102 (Ch. 101.814-1A

SILVERTONE MODELS 7085 (Ch. 101.814) 7102 (Ch. 101.814-1A



MODEL 7085



MODEL 7102

SILVERTONE MODELS 7085 (Ch. 101.814) 7102 (Ch. 101.814-1A

TRADE NAME	Silvertone, Models 7085 (Ch. 101.814), 7102 (Ch. 101.814-1A)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Phono-Radio Combination Superheterodyne with Wire Recorder-(For Wire Recorder Information see Photofact Folder #4716-32, Set. #26.)
TUBES (EIGHT)	Types, 14Q7 Converter, 7B7 IF Amp., 7C6 Det.-AVC-AF, 50A5 Power Output, 1280 Pre-Amp., 50A5 Bias Osc., (2) 35Y4 Rectifier
POWER SUPPLY	110-120 Volts AC
TUNING RANGE—BROADCAST	540-1600KC RATING .380 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer, turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.
Use isolation transformer if available. If not connect a .1 MFD capacitor in series with low side of signal generator and B- .
Loop should be maintained in same relative position to chassis as when receiver is in cabinet.
Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.1 MFD.	High side to Pin 6 (grid) 14Q7. Low side to B-.	455KC	Tuning cap. fully closed.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used, reduce dummy ant. to .001 MFD. to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead. Low side to B-.	1500KC	1500KC	"	A5	Adjust for maximum output.
3	200MMFD	"	"	Tune for maximum output.	"	A6	Adjust for maximum output. Repeat Steps 1, 2 & 3 until no further improvement can be made.

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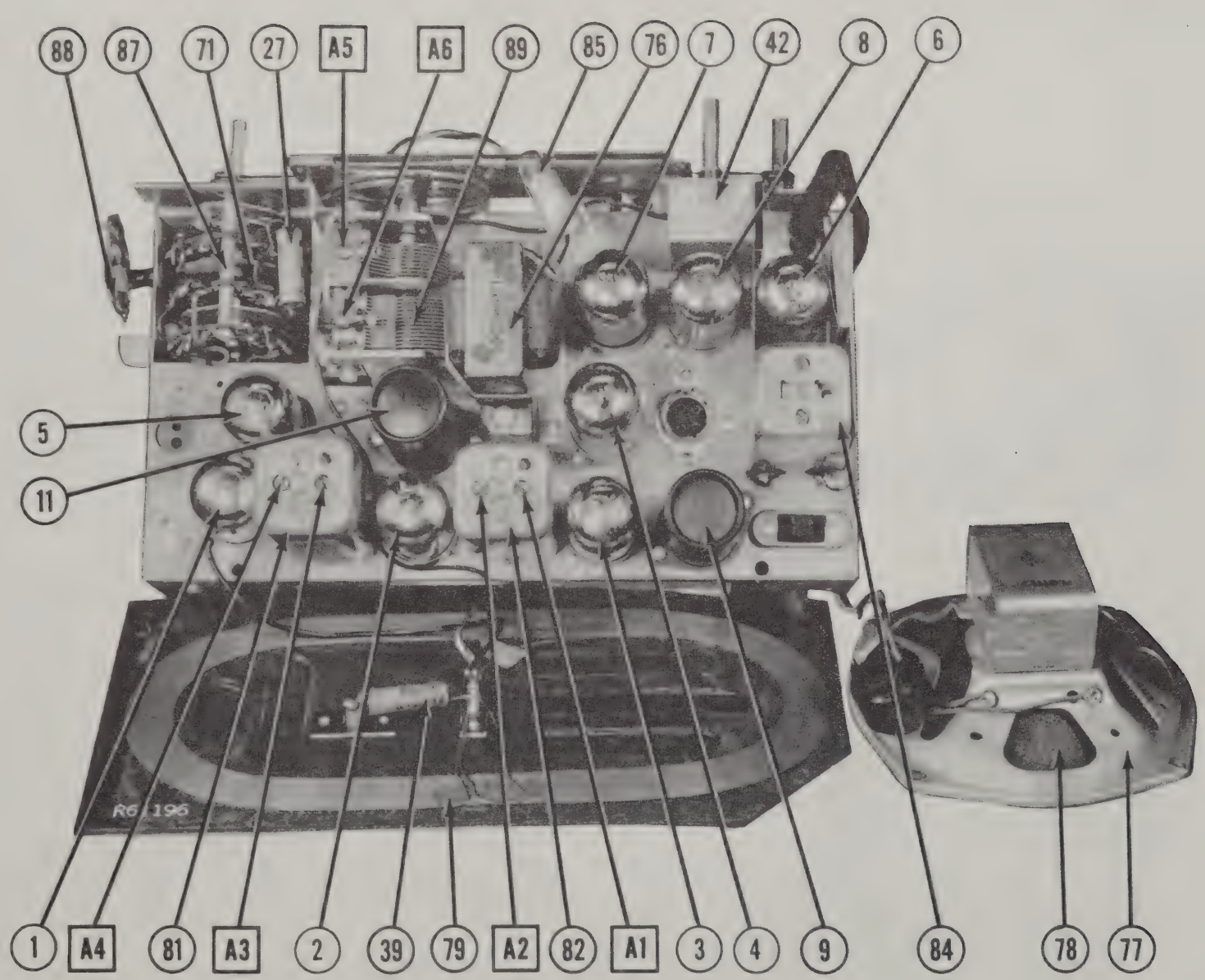
DATE 12/47 SET #30 FOLDER #4720-27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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1407	1407	8AL	
2	IF Amp.	7B7	7B7	8V	
3	Det.-AVC-AF	7C6	7C6	8W	
4	Power Output	50A5	50A5	6AA	
5	Pre-Amp.	1280	1280	8V	
6	Bias Osc.	50A5	50A5	6AA	
7	Rectifier	35Y4	35Y4	5AL	
8	Rectifier	35Y4	35Y4	5AL	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
9A	40	200	R61507			EL-245		UP6BJ35	■ Filter
B	40	200							▲ "
10	40	200	R61517	TC-48	M-40-350	UT-402		BR4025	"
11A	40	150	R60416	FP311	DY-305	EL-352		UP4415C	■ "
B	40	150							▲ "
C	20	25							Cathode Bypass
12	.05	600		TP415	MPH-6-05	TC-15	684-05	DT6S5	Line Filter
13	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Wire Recorder Isol.
14	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Erase Osc. Grid
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Feedback
16	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	AF Screen Bypass
17	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
18	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	Tone Comp.
19	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	" "
20	.01	600		TP410	S-6-01	TC-11	684-01	DT6S1	Output Plate Bypass
21	.004	400		TP407	S-6-004	TC-24	484-004	DT6D4	Tone Comp.
22	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
23	.005	400		TP408	S-6-005	TC-25	484-005	DT6S5	" "
24	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Tone Compensation
25	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Tone Compensation
26	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
27	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	Tone Compensation
28	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	" "
29	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Recorder Coupling
30	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Phono Coupling
31	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Phono Isolation
32	.1	600		TP418	S-6-1	TC-1	684-.1	DT6P1	Recorder Coupling
33	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supp.
34	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
35	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
36	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Tuning Cap. Isol.
37	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	Cathode Bypass
38	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
39	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Ext. Ant. Coupling
40	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	AF Plate Bypass
41	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	Osc. Grid Cap.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
42A	500KΩ	½	R61128	TM233	D18-133X	T-88	Volume Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 42A per instructions
43A	2 Meg.	½	R61864	MR55	D13-139	M-66-Z	Tone Control
B	Shaft		Not Req.	Not Req.	A	Not Req.	Attach to 43A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

PARTS LIST AND DESCRIPTIONS (Continued)

R F COILS

ITEM No.	USE	DC RES.: PRI.	DC RES.: SEC.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: MEISSNER PART No.
79	Loop Ant.	.2Ω	2Ω	R61557	
80	Osc. Coil		18Ω	R61107	14-1040
81	Input IF	14Ω	13Ω	R61111	16-6658
82	Output IF	12Ω		R61142	16-6670*
83	RF Choke		22Ω	R43050	
84	Bias Osc.	.1Ω	4Ω	R61519	

*Add 220KΩ resistor from low side of secondary to B-.

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA	INSTALLATION NOTES
85	Bayonet	6-8	0.15	Brown			Type 47

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA: SILVERTONE PART No.	REPLACEMENT DATA: ASTATIC PART No.	REMARKS
86	R61977	L-71-A	

MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
87	Position Switch	R62035	
88	Indicator	R45981	Neon
89	2 Gang Var. Cap.	R61100	(38-493MMF, 30-195MMF)

DISASSEMBLY INSTRUCTIONS ON MODEL 7085

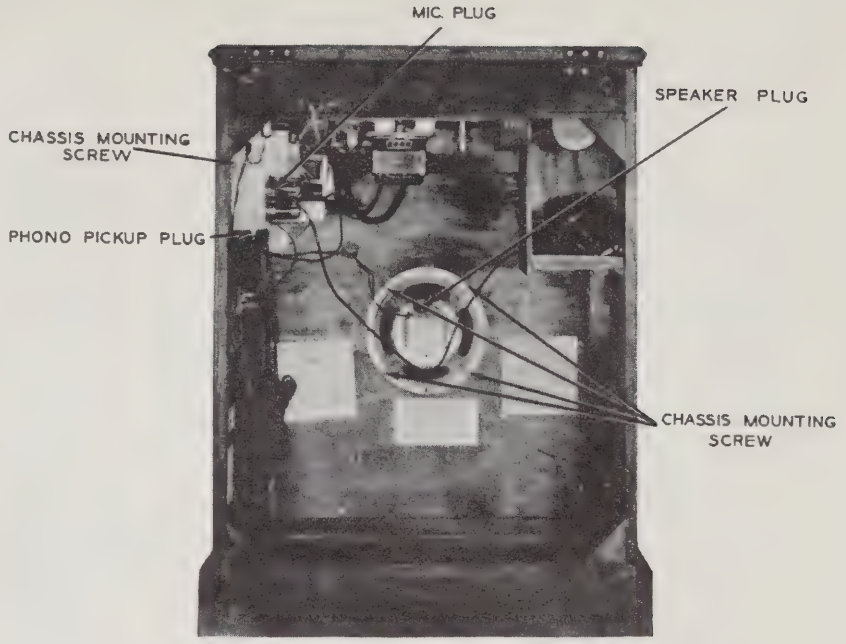
1. Remove four push-on type control knobs.
2. Remove twelve wood screws holding panel on back of cabinet. Disconnect loop leads and remove panel from back of cabinet.
3. Remove phono-pickup plug from back of
4. Remove plug from chassis attached to recorder chassis.
5. Remove plug from recording head. Unsolder black ground lead from recorder.
6. Remove microphone plug from chassis.
7. Remove speaker plug from speaker.
8. Remove three Phillips head screws holding chassis in cabinet. Remove chassis from cabinet.
9. Remove four wood screws holding speaker in cabinet. Remove speaker from cabinet.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
44	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
45	100Ω	½		BW-½-100	Br.-Blk.-Br. Converter Cathode
46	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. AVC Network
47	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. " "
48	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. AF Grid
49	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AF Plate Load
50	15KΩ	1		BTA-15K	Br.-Grn.-Or. Tone Compensation
51	10KΩ	½		BTS-10K	Br.-Blk.-Or. Tone Compensation
52	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Output Grid
53	150Ω	½		BW-½-150	Br.-Grn.-Br. Output Cathode
54	1500Ω	1		BTA-1500	Br.-Grn.-Red Filter
55	25Ω	1		BW-1-27	Red-Grn.-Blk. Surge Limiter
56	25Ω	1		BW-1-27	Red-Grn.-Blk. " "
57	130Ω	5			Br.-Or.-Br. Line Dropping
58	1200Ω	½		BTS-1200	Br.-Red-Red Filter
59	10KΩ	½		BTS-10K	Br.-Blk.-Or. Filter
60	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn. Pre-Amp. Screen Dropping
61	390KΩ	½		BTS-390K	Or.-White-Yl. Pre-Amp. Plate Load
62	4.7 Meg.	½		BTS-4.7 Meg.	Yl.-Vi.-Grn. Pre-Amp. Grid
63	33KΩ	½		BTS-33K	Or.-Or.-Or. Bias Oscillator Grid-See Note 5
64	56Ω	½		BW-½-56	Grn.-Blue-Blk. Parasitic Suppressor
65	8200Ω	½		BTS-8200	Gray-Red-Red Tone Compensation
66	10Ω	½		BW-½-10	Br.-Blk.-Blk. Voice Coil Shunt - See Note 4
67	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Tone Compensation
68	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Series Neon Indicator
69	18Ω	½		BW-½-18	Br.-Gray-Blk. Voice Coil Shunt - See Note 3
70	5Ω	1		BW-1-4.7	Blk.-Grn.-Blk. Series Voice Coil - See Note 2
71	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Volume Control Shunt
72	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Series Phono
73	50Ω	3			Grn.-Blk.-Blk. Line Dropping
74	120KΩ	½		BTS-120K	Br.-Red-Yl. Tone Compensation
75	270KΩ	½		BTS-270K	Red-Vi.-Yl. Microphone Shunt-See Note 1

Note 1 - Not used in all models.
Note 2 - Early production used 10Ω in this application. IRC replacement BW-½-10.
Note 3 - Early production used 12Ω in this application. IRC replacement BW-½-12.
Note 4 - Early production used 15Ω in this application. IRC replacement BW-½-15.
Note 5 - Early production used 68KΩ in this application. IRC replacement BTS-68K.



TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
76	2400Ω	3.2Ω	302Ω tapped @ 7Ω & 182Ω	.5Ω	R61506				

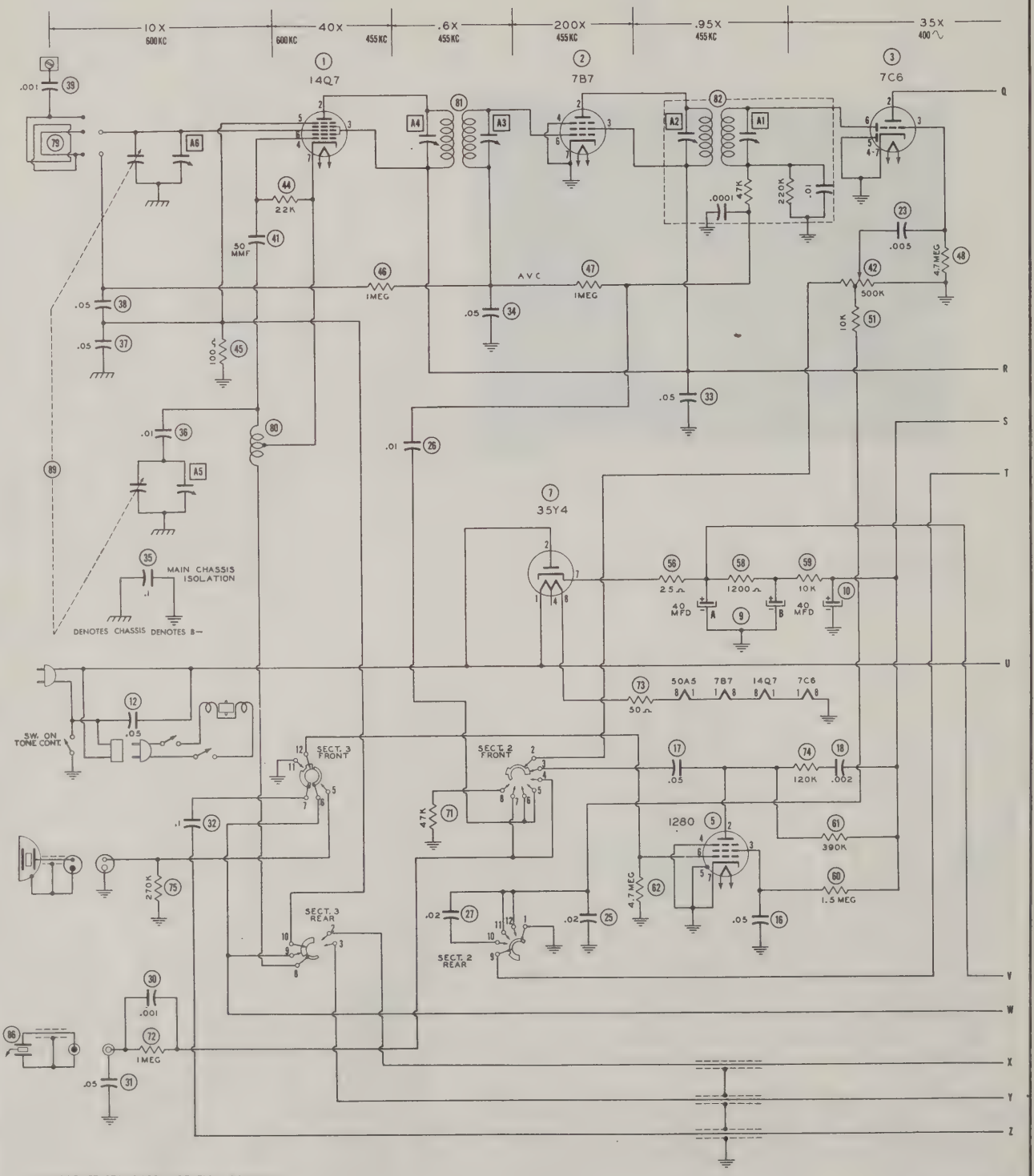
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SILVERTONE PART No.	JENSEN PART No.		
77A	FIELD PM	VC IMP. 3.2Ω	R61117	ST-108 Mod. P6-X		Used in Model 7085 only
78A	CONE DIA. 5-1/8"	VC DIA. 1/2"	R60780			
77B	FIELD PM	VC IMP. 3.1Ω	R61558	ST-117 Mod. P8-T		Used in Model 7102 only
78B	CONE DIA. 7-7/8"	VC DIA. 3/4"	R59799			

DISASSEMBLY INSTRUCTIONS FOR MODEL 7102

1. Remove four push-on type control knobs.
2. Remove phono pick-up plug from chassis.
3. Remove plug from chassis attached to recorder switch.
4. Remove plug from recording head. Unsolder black ground lead from recorder.
5. Remove phono-motor plug from chassis.
6. Remove microphone plug from chassis.
7. Remove speaker plug from speaker.
8. Remove three screws holding chassis.in cabinet. Remove chassis from cabinet.
9. Remove four wood screws holding speaker in cabinet. Remove speaker from cabinet.

DATE 12/47 SET #30 FOLDER #4720-27



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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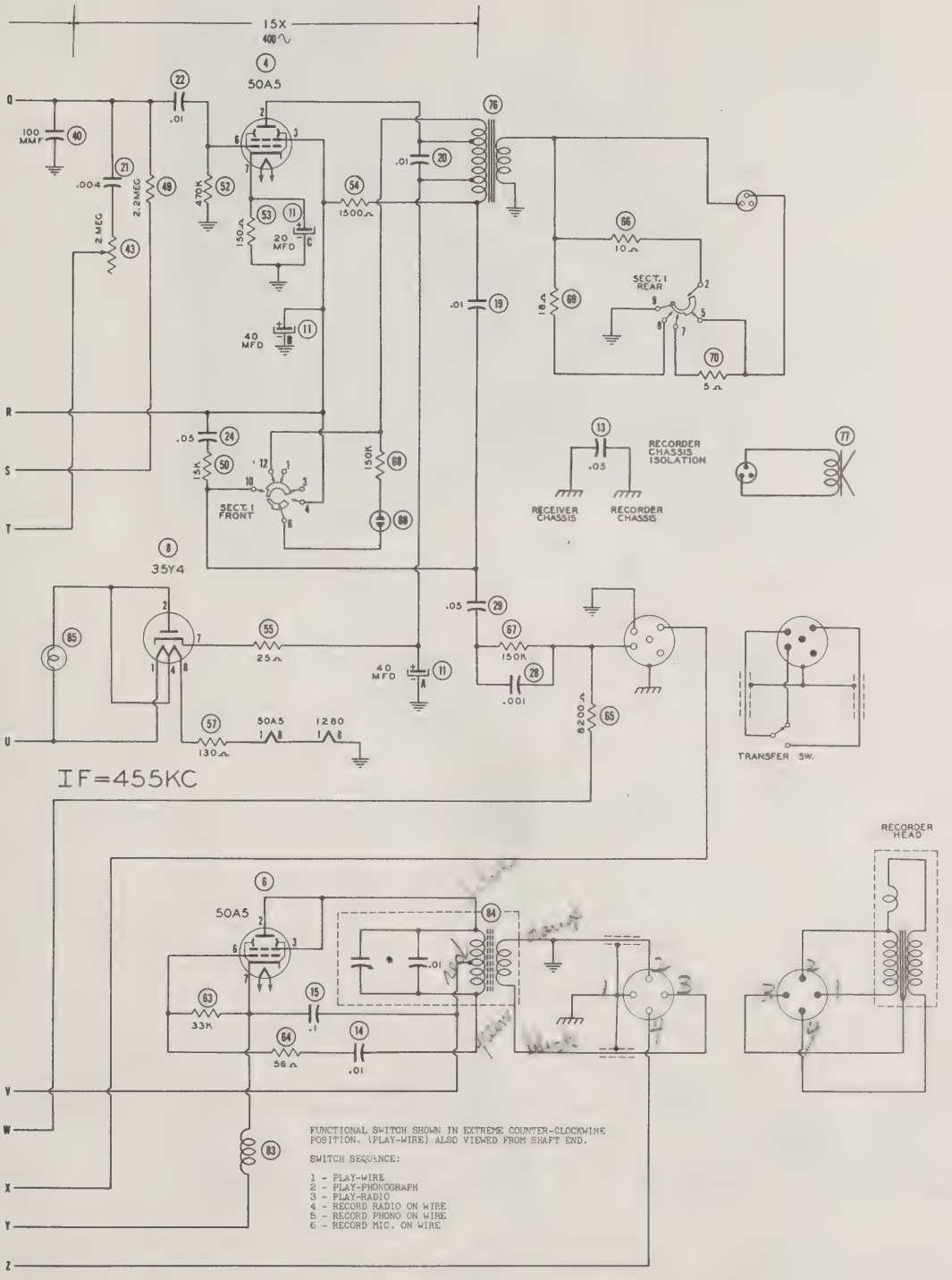
4720-27

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	19VAC	80VDC	80VDC	-7.4VDC§	.8VDC	-.1VDC	.8VDC	7VAC
2	7B7	25VAC	80VDC	80VDC	0V.	0V.	-.1VDC	0V.	19VAC
3	7C6	7VAC	50VDC	-.4VDC	0V.	0V.	-.4VDC	0V.	0V.
4	50A5	25VAC	110VDC	80VDC	0V.	0V.	0V.	5VDC	75VAC
# 5	1280	12VAC	38VDC	18VDC	0V.	0V.	-.6VDC	0V.	0V.
± 6	50A5	62VAC	150VDC	150VDC	150VDC	-37VDC	-37VDC	.2VDC	12VAC
7	35Y4	117VAC	117VAC	0V.	108VAC	150VDC	0V.	150VDC	87VAC
8	35Y4	117VAC	112VAC	115VDC	112VAC	115VDC	0V.	117VDC	87VAC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

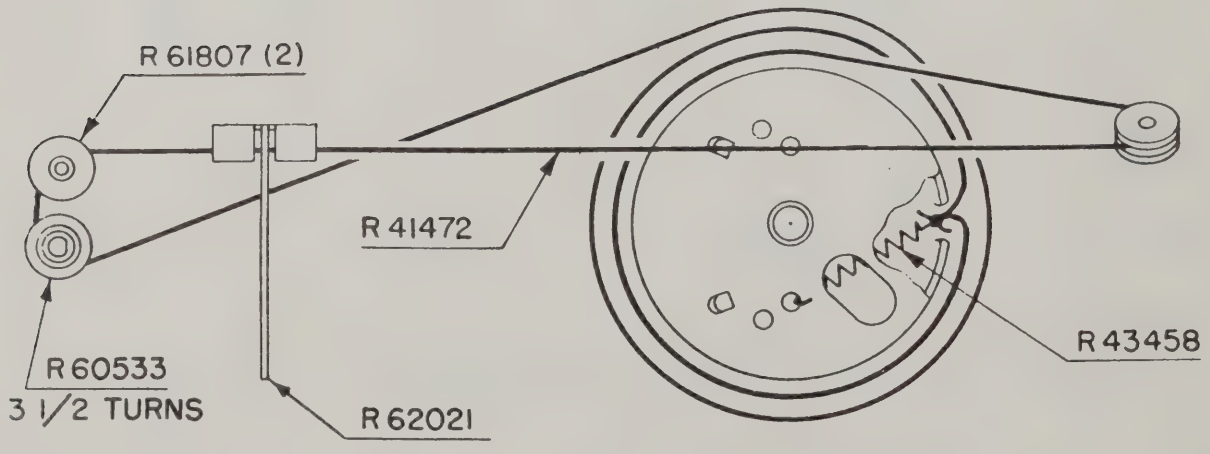
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	14Q7	18Ω	170KΩ	170KΩ	22KΩ	90Ω	2.3 Meg.	90Ω	7Ω
2	7B7	24Ω	170KΩ	170KΩ	0Ω	0Ω	1.3 Meg.	0Ω	18Ω
3	7C6	7Ω	2.4 Meg.	5 Meg.	0Ω	0Ω	200KΩ	0Ω	0Ω
4	50A5	24Ω	170KΩ	170KΩ	INF.	INF.	440KΩ	150Ω	60Ω
# 5	1280	12Ω	540KΩ	1.7 Meg.	0Ω	0Ω	5 Meg.	0Ω	0Ω
± 6	50A5	52Ω	140KΩ	140KΩ	140KΩ	38KΩ	38KΩ	22Ω	12Ω
7	35Y4	90Ω	90Ω	0Ω	90Ω	140KΩ	INF.	140KΩ	85Ω
8	35Y4	90Ω	90Ω	170KΩ	90Ω	170KΩ	INF.	170KΩ	95Ω

#READINGS ON TUBE #5 TAKEN IN "PLAY-WIRE RECORDING " POSITION(FULL C.C.W.)

±TAKEN WITH SWITCH CONTACT #3 OF SECTION 3 REAR CONNECTED TO B-.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

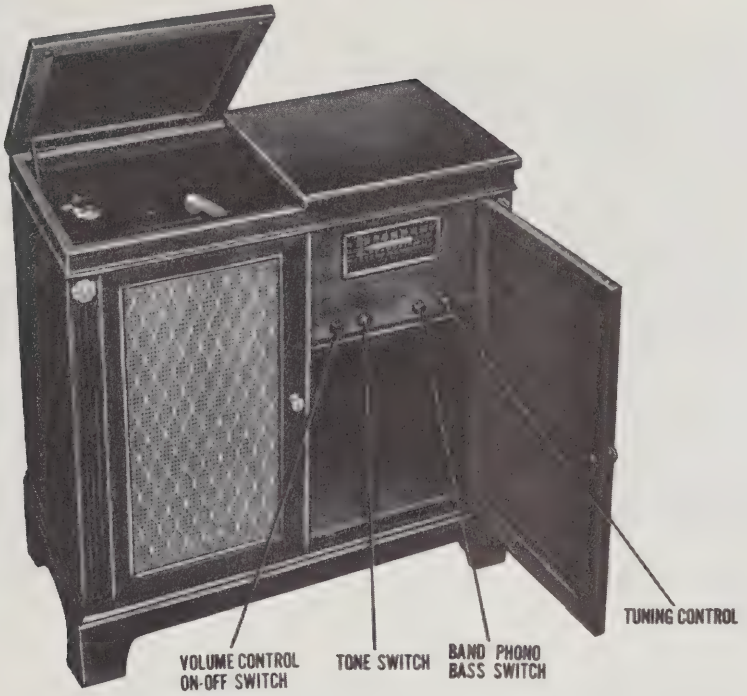
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.



TUNING GANG FULLY CLOSED

DIAL CORD DRIVE

SILVERTONE MODEL
7111 (Ch. 434.140)



SILVERTONE MODEL
7111 (Ch. 434.140)

SILVERTONE MODEL 7111 (Ch. 434.140)

TRADE NAME	Silvertone, Model 7111 (Ch. 434.140)
SUPPLIER	Sears, Roebuck & Co., 925 S. Homan St., Chicago, Ill.
TYPE SET	AC Operated Phono-Radio Combination Multi-Band Superheterodyne with Loop Antenna
TUBES (EIGHT)	Types, 6SK7GT RF Amp., 6SA7 Converter, 6SK7 IF Amp., 6SQ7 Det.-AVC-AF, 6J5 Phase Inverter, (2) 6V6GT Power Output, 5Y3GT Rectifier.
POWER SUPPLY	110-120 Volts AC
RATING	.780 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	535-1680KC
SHORT WAVE	2.2-7.2MC 6.9-23.5MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to the + mark at low freq. end of BC band.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.01 MFD	High side to center stator of tuning cap. Low side to chassis.	455KC	BC	High freq. end of dial	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output
2	100MMFD	High side to ant. terminal. Low side to chassis.	1680KC	"	Tuning cap. fully open.	"	A5	" " " "
3	100MMFD	"	1500KC	"	Tune for maximum output.	"	A6,A7	" " " "
4	100MMFD	"	600KC	"	"	"	A8	Rock tuning cap. and adjust for maximum output.
5	100MMFD	"	1680KC	"	Tuning cap. fully open.	"	A5	Adjust for maximum output
6	.01 MFD	High side to Pin 8 (grid) 6SA7. Low side to chassis.	7.2MC	SW 1	"	"	A9	" " " "
7	400Ω	High side to ant. terminal. Low side to chassis.	2.5MC	"	2.5MC	"	A10	Rock tuning cap. and adjust for maximum output.
8	400Ω	"	6.0MC	"	Tune for maximum output.	"	A11,A12	Adjust for maximum output
9	400Ω	"	7.2MC	"	Tuning cap. fully open.	"	A9	" " " "
10	400Ω	"	23.5MC	SW 2	"	"	A13	" " " "
11	400Ω	"	21MC	"	Tune for maximum output.	"	A14, A15	" " " "

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SILVERTONE PART No.	STANDARD REPLACEMENT		
1	RF Amp.	6SK7GT	6SK7GT	8N	
2	Converter	6SA7	6SA7	8R	
3	IF Amp.	6SK7	6SK7	8N	
4	Det.-AVC-AF	6SQ7	6SQ7	8Q	
5	Phase Inverter	6J5	6J5	6Q	
6	Power Output	6V6GT	6V6GT	7AC	
7	Power Output	6V6GT	6V6GT	7AC	
8	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SILVERTONE PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
9A	40	450		FP238	DY-2x40-450	EL-240	"	UP4445	■ Filter
B	40	450							▲ "
10	.05	400	C13806	TP426	S-4-05	TC-15	484-05	DT4S5	Line Bypass
11	.002	600		TP405	S-6-002	TC-12	684-002	DT6D2	Output Plate Bypass
12	.002	600		TP405	S-6-002	TC-12	684-002	DT6D2	" " "
13	.25	400		TP430	S-4-25	TC-2	484-.25	DT4P25	Plate Decoupling
14	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
15	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	" "
16	.02	400		TP423	S-4-02	TC-12	484-02	DT4S2	" "
17	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Tone Compensation
18	.002	600		TP405	S-6-002	TC-22	684-002	DT6D2	" "
19	.005	400		TP408	S-6-005	TC-25	484-005	DT6D4	Audio Coupling
20	.001	600		TP404	S-6-001	TC-21	684-001	DT6D1	Tone Compensation
21	.01	200		TP421	S-4-01	TC-11	484-01	DT4S1	Audio Coupling
22	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	IF Screen Bypass
23	.03	400		TP424	S-4-03	TC-13	484-03	DT4S3	Plate Decoupling
24	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	IF Cath. Bypass
25	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	AVC Filter
25	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Conv. Screen Bypass
27	.05	200		TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
28	.02	200		TP423	S-4-02	TC-12	484-02	DT4S2	Conv. Grid Filter
29	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	RF Screen Bypass
30	.03	400		TP424	S-4-03	TC-13	484-03	DT4S3	RF Cath. Bypass
31	.005	400		TP408	S-6-005	TC-25	484-005	DT6D5	Ext. Ant. Coupling
32	250	500		MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Audio Plate Bypass
33	6800	300							Tone Compensation
34	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	" "
35	100	500		MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
36	500	500		MCB245	MOS.5'-35	MB-35	1469-0005	5R5T5	Fixed Padder
37	4000	300		MC463	MW.5-24	1FM-24	1467-004	1D5D4	" "
38	3	500							RF Coupling
39	50	500		MC225	MO.5-45	1FM-45	1468-00005	5W5Q5	RF Pri. Shunt
40	6800	300							RF Coupling

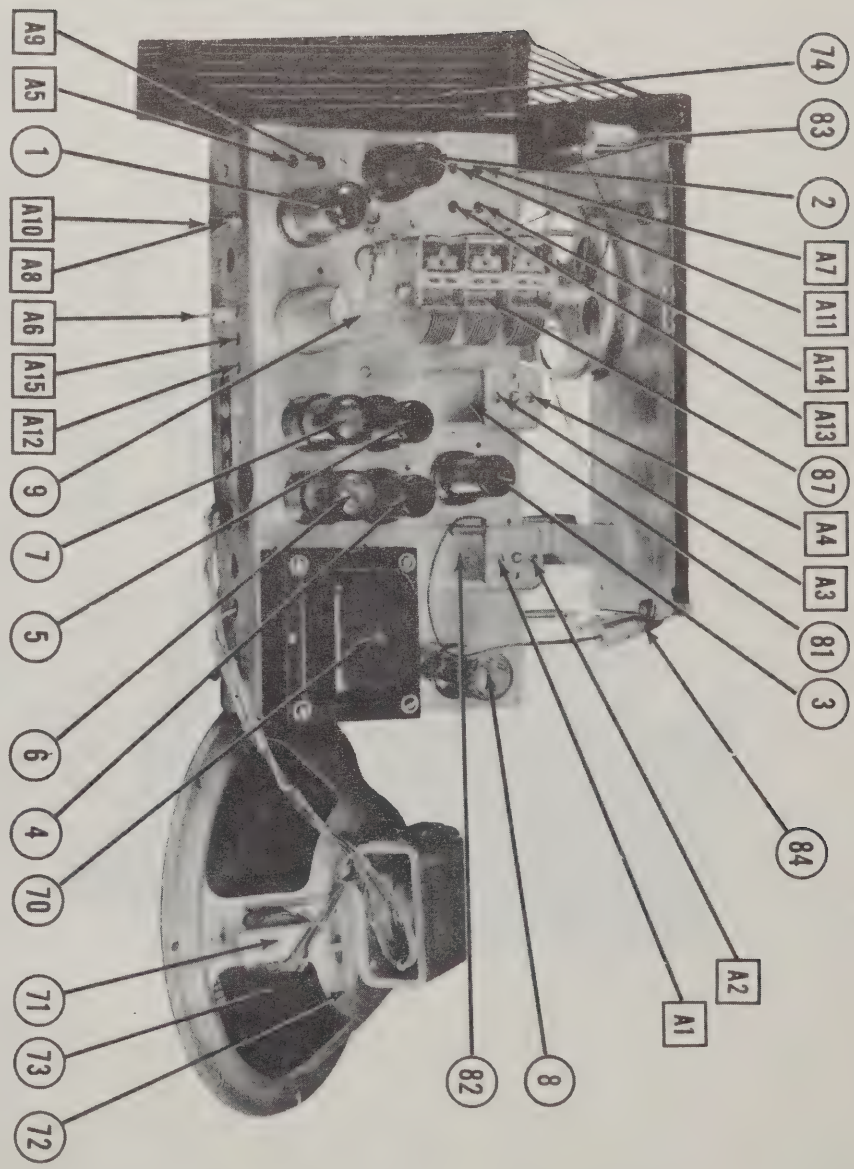
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SILVERTONE PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
41A	500KΩ	1	X13371	TM233	D18-133X	T-88	Volume Control
B	Shaft			Not Req.	A	Not Req.	Attach to 41A per instructions
C	Switch			M26	41	SW-A	" " " " "

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
42	1000Ω	½		BTS-1000	Br.-Blk.-Red Antenna Loading
43	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. RF Grid
44	270Ω	½		BW-½-270	Red-Vi.-Br. RF Cathode
45	1.5 Meg.	½		BTS-1.5 Meg.	Br.-Grn.-Grn: Converter Grid SW 2
46	22KΩ	½		BTS-22K	Red-Red-Or. Oscillator Grid
47	8200Ω	½		BTS-8200	Gray-Red-Red Parasitic Suppressor
48	220KΩ	½		BTS-220K	Red-Red-Yl. AVC Network

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SILVERTONE PART No.	IRC PART No.	
49	22KΩ	2		BT-2-22K	Red-Red-Or. Converter Screen Dropping
50	270Ω	½		BW-½-270	Red-Vi.-Br. IF Cathode
51	22KΩ	1		BTA-22K	Red-Red-Or. Screen Dropping
52	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. AVC Network
53	150KΩ	½		BTS-150K	Br.-Grn.-Yl. Diode Load
54	330KΩ	½		BTS-330K	Or.-Or.-Yl. Diode Load
55	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Series Phono
56	2.2 Meg.	½		BTS-2.2 Meg.	Red-Red-Grn. Phono Shunt
57	15 Meg.	½		BTS-15 Meg.	Br.-Grn.-Blue AF Grid
58	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. AF Plate Load
59	22KΩ	½		BTS-22K	Red-Red-Or. Tone Compensation
60	470KΩ	½		BTS-470K	Yl.-Vi.-Yl. Phase Inverter Grid
61	4700Ω	½		BTS-4700	Yl.-Vi.-Yl. Phase Inverter Cathode-See Note 1
62	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Cathode
63	47KΩ	½		BTS-47K	Yl.-Vi.-Or. Phase Inverter Plate Load
64	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
65	220KΩ	½		BTS-220K	Red-Red-Yl. " "
66	120Ω	2		BW-2-120	Br.-Red-Br. Output Cathode
67	4000Ω	10	X14.037	AB-4000	Filter
68	47KΩ	½		BTS-47K	Yl.-Vi.-Or. "
69	51Ω	½		BW-½-56	Grn.-Br.-Br. Parasitic Suppressor

Note 1 - Some models use 3300Ω in this application. IRC replacement BTS-3300.

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	SILVERTONE PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
70	117V AC @ .78A	640V CT @ .104A	5.1V AC @ 2.0A	6.5V AC @ 2.3A	X13370	P-6013*	T22R06	P-2954*

*Add resistor to reduce plate voltage.

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SILVERTONE PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
71	13700Ω CT	3.8Ω	530Ω CT	.4Ω	X15.019	A-3823	T22S48 ‡	A-2901	‡Drill one new mounting hole.

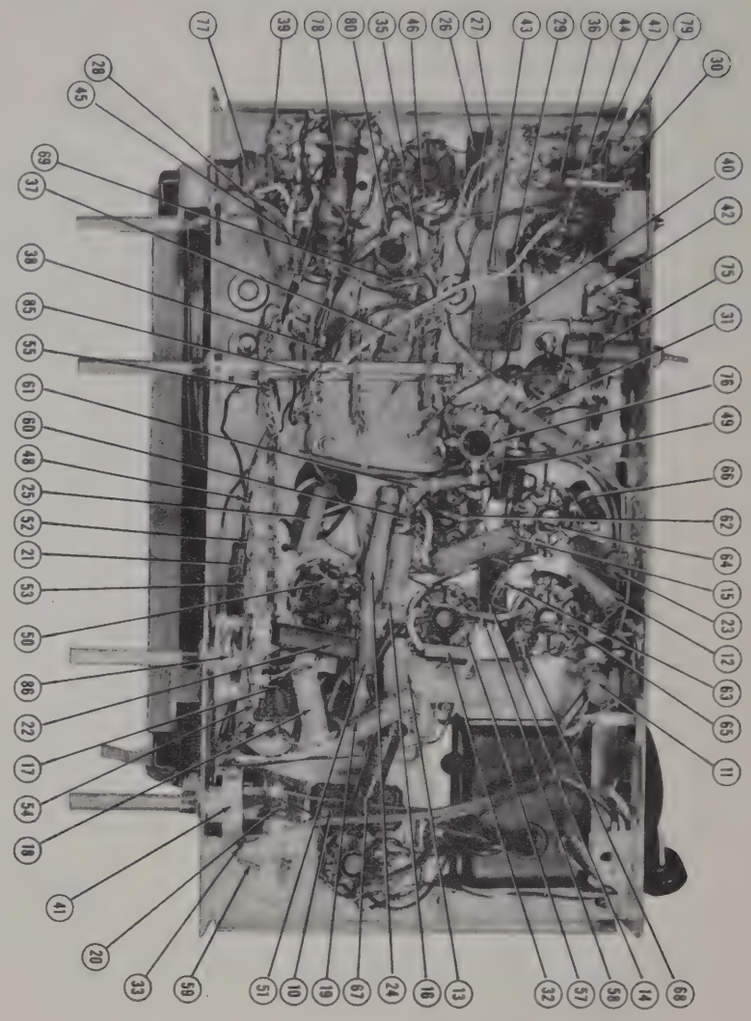
SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
	FIELD	VC IMP.	SILVERTONE PART No.	JENSEN PART No.		
72	PM	3.8Ω	X13939	ST-1191† Mod. P10-T		†Replace output transformer to match 6Ω voice coil.
73	CONE DIA. 9½"	VC DIA. 1"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT.			

R F COILS

ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SILVERTONE PART No.	MEISSNER PART No.	
74	Loop Ant.		.3Ω	X14495		
75	BC Ant. Loading Coil		2.3Ω	X13997		
76A	SW Ant.Coil 1	1Ω	0Ω	X13373		76A & 76B wound on same form
B	" " " 2	0Ω	0Ω			
77	BC RF Coil	130Ω	5Ω	X13374	14-1027	
78A	SW " " 1	27Ω	.5Ω	X13375		78A & 78B " " " "
B	" " " 2	7Ω	0Ω			
79A	BC Osc. Coil		7Ω	X13376		79A & 79B " " " "
B	SW " " 1		2.5Ω			
80	SW " " 2		0Ω	X13377	14-1046	
81	Input IF	25Ω	25Ω	X13902	16-6658	
82	Output IF	13Ω		X13903	16-6670	

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

DIAL LIGHT

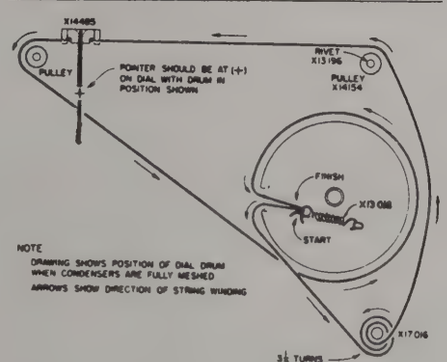
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SILVERTONE PART No.		
83	Bayonet	6-8	0.15	Brown			Type 47
84	"	"	"	"			" "

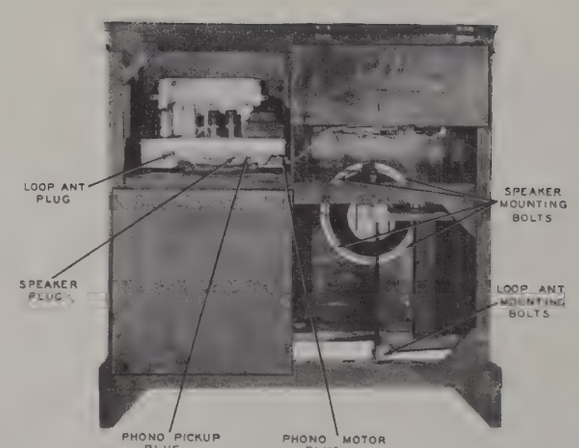
MISCELLANEOUS

ITEM No.	PART NAME	SILVERTONE PART No.	NOTES
85	Switch	X13378	Band-Bass-Phono
86	Tone Switch	X13379	
87	3 Gang Var. Cap.	X13385	15-479 MMF (each section)
	Dial Glass	X3.087	
	Dial Pointer	X14485	

PHONO CARTRIDGE

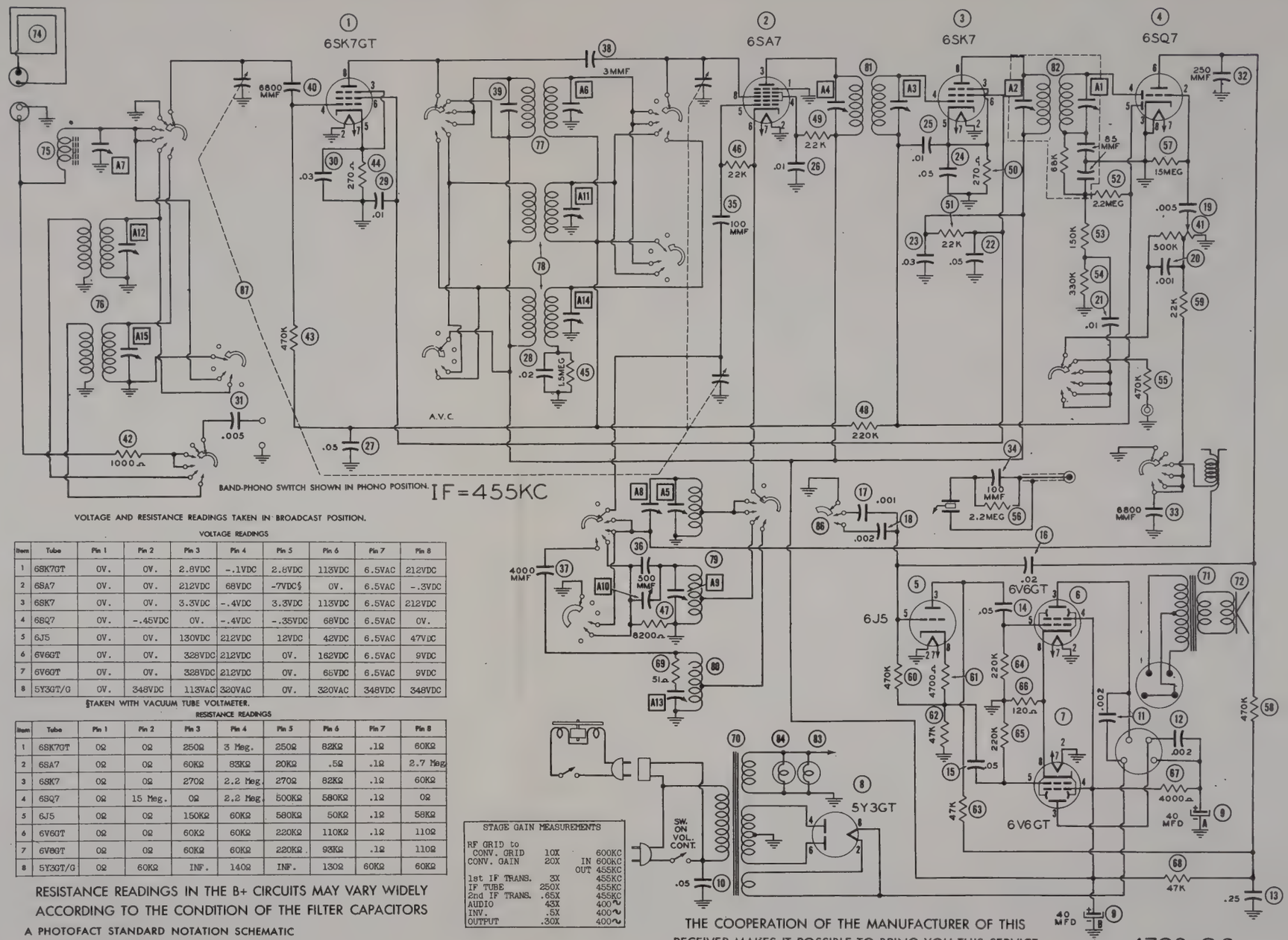
ITEM No.	REPLACEMENT DATA		REMARKS
	SILVERTONE PART No.	ASTATIC PART No.	
88	X28.012-1	L-70-A	





DISASSEMBLY INSTRUCTIONS

1. Remove four control knobs from front of cabinet.
2. Remove speaker plug from chassis.
3. Remove phono-motor plug from receptacle.
4. Remove phono-pickup plug from chassis.
5. Remove loop antenna plug from chassis.
6. Remove four chassis mounting bolts. Remove chassis.
7. Remove 14 self-tapping screws holding bottom shield to chassis. Remove shield.
8. Remove four hex nuts holding speaker. Remove speaker.
9. Remove two bolts holding antenna in brackets. Remove loop antenna.



VOLTAGE AND RESISTANCE READINGS TAKEN IN BROADCAST POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0V.	0V.	2.8VDC	-.1VDC	2.8VDC	113VDC	6.5VAC	212VDC
2	6SA7	0V.	0V.	212VDC	68VDC	-7VDC§	0V.	6.5VAC	-.3VDC
3	6SK7	0V.	0V.	3.3VDC	-.4VDC	3.3VDC	113VDC	6.5VAC	212VDC
4	6SQ7	0V.	-.45VDC	0V.	-.4VDC	-.35VDC	68VDC	6.5VAC	0V.
5	6J5	0V.	0V.	130VDC	212VDC	12VDC	42VDC	6.5VAC	47VDC
6	6V6GT	0V.	0V.	328VDC	212VDC	0V.	162VDC	6.5VAC	9VDC
7	6V6GT	0V.	0V.	328VDC	212VDC	0V.	65VDC	6.5VAC	9VDC
8	5Y3GT/G	0V.	348VDC	113VAC	320VAC	0V.	320VAC	348VDC	348VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SK7GT	0Ω	0Ω	250Ω	3 Meg.	250Ω	82KΩ	.1Ω	60KΩ
2	6SA7	0Ω	0Ω	60KΩ	83KΩ	20KΩ	.5Ω	.1Ω	2.7 Meg.
3	6SK7	0Ω	0Ω	270Ω	2.2 Meg.	270Ω	82KΩ	.1Ω	60KΩ
4	6SQ7	0Ω	15 Meg.	0Ω	2.2 Meg.	500KΩ	580KΩ	.1Ω	0Ω
5	6J5	0Ω	0Ω	150KΩ	60KΩ	580KΩ	50KΩ	.1Ω	58KΩ
6	6V6GT	0Ω	0Ω	60KΩ	60KΩ	220KΩ	110KΩ	.1Ω	110Ω
7	6V6GT	0Ω	0Ω	60KΩ	60KΩ	220KΩ	93KΩ	.1Ω	110Ω
8	5Y3GT/G	0Ω	60KΩ	INF.	140Ω	INF.	130Ω	60KΩ	60KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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4720-28

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

SPARTON MODELS
5AI16, 5AW16 (Ch. 5-16)

SPARTON MODELS
5AI16, 5AW16 (Ch. 5-16)

SPARTON MODEL 5AI16

TRADE NAME	Sparton, Models 5AI16, 5AW16 (Ch. 5-16)
MANUFACTURER	Sparks-Withington Co., Jackson, Mich.
TYPE SET	AC-DC Operated Superheterodyne with Loop Ant.
TUBES (FIVE)	Types, 12SA7GT Converter, 12SK7GT IF Amp., 12SQ7GT Det.-AVC-AF, 50L6GT Power Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC
TUNING RANGE—BROADCAST	530-1650KC RATING .250 Amp. @ 117 Volts AC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

RMA dummy consists of 200 MMFD cap. in series with 20 micro henry choke. The choke shunted by by a 400 MMFD cap. in series with 400Ω carbon resistor.

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use isolation transformer if available. If not, connect a .1 MFD capacitor in series with low side of signal generator and B-.

Loop should be maintained in same relative position to chassis as when receiver is in cabinet.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	RMA DUMMY	High side to Pin 6 (grid) 12SA7. Low side to B-.	456KC	Tuning cap. fully open.	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If isolation transformer is not used reduce dummy ant. to .001 MFD. to reduce hum modulation.
2		Loop	1500KC	1500KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	"	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/47 SET #30 FOLDER #4720-29

PARTS LIST AND DESCRIPTIONS

SPARTON MODELS
5AI16, 5AW16 (Ch. 5-16)

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		SPARTON PART No.	STANDARD REPLACEMENT		
1	Converter	12SA7GT	12SA7GT	8AD	
2	IF Amp.	12SK7GT	12SK7GT	8N	
3	Det.-AVC-AF	12SQ7GT	12SQ7GT	8Q	
4	Power Output	50L6GT	50L6GT	7AC	
5	Rectifier	35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	SPARTON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
6A	40	150	PA4301-1	2N514	DSB-2x40-150	TA-240	PRSA150-40-20	BRD4215	Filter - Yellow
B	20	150							" - Red
7	.05	200	PC40GL-503	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.01	400	PC40GL-103	TP421	S-4-01	TC-11	484-01	DT4S1	Output Plate Bypass
9	.002	600	PC40GL-202	TP405	S-6-002	TC-22	684-002	DT6D2	Audio Coupling
10	.01	400	PC40GL-103	TP421	S-4-01	TC-11	484-01	DT4S1	" "
11	.05	200	PC40GK-503	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
12	.15	400	PC40GL154	TP417	S-4-2	TC-1	464-.15	DT4P2	Line Isolation
13	.05	200	PC40GK-503	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Power Supply
14	.001	400	PC40GL-102	TP404	S-6-001	TC-21	484-001	DT6D1	Ext. Ant. Coupling
15	510	500	MC60G-511	MC245	M0.5-35	1FM-35	1468-0005	5W5T5	AF Plate Bypass
16	270	500	MC60G-271	MC240	M0.5-325	1FM-325	1468-00025	5W5T25	Diode RF Filter

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	SPARTON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
17A	500KΩ	½	PA-4400-3	MK401	D13-133	AM-60-Z	Volume Control
B	Shaft		Not Req.	Not Req.	E	KSS-3	Attach to 17A per instructions
C	Switch		" "	M26	41	SW-A	" " " " "

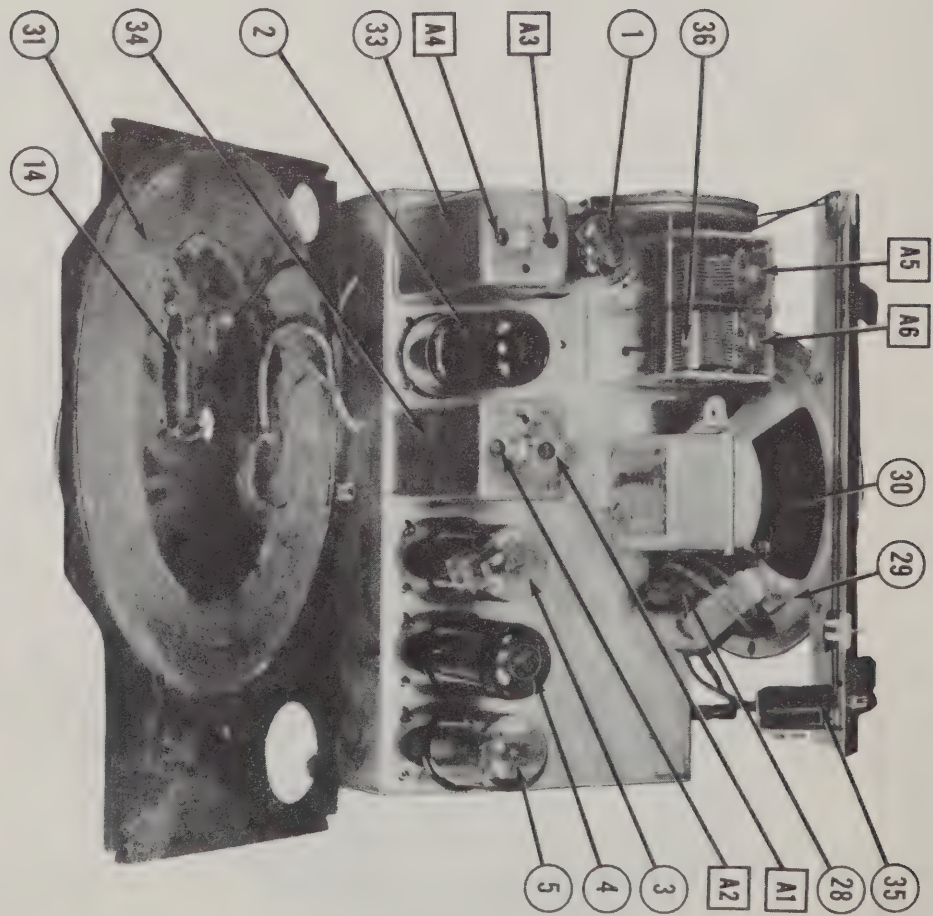
RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	SPARTON PART No.	IRC PART No.	
18	150KΩ	½	BR12N-154	BTS-150K	Br.-Grn.-Yl. Line Isolation
19	22KΩ	½	BR12S-223	BTS-22K	Red-Red-Or. Oscillator Grid
20	15 Meg.	½	BR12S-156	BTS-15 Meg.	Br.-Grn.-Blue AVC Network
21	2.2 Meg.	½	BR12N-225	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
22	5.6 Meg.	½	BR12S-565	BTS-5.6 Meg.	Grn.-Blue-Grn. AF Grid
23	220KΩ	½	BR12N-224	BTS-220K	Red-Red-Yl. AF Plate Load
24	470KΩ	½	BR12N-474	BTS-470K	Yl.-Vi.-Yl. Output Grid
25	150Ω	½	BR12S-151	BW-½-150	Br.-Grn.-Br. Output Cathode
26	1200Ω	1	CR12S-122	BTA-1200	Br.-Red-Red Filter
27	82Ω	½	BR12S-820	BW-½-82	Gray-Red-Blk. Pilot Light Shunt

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		SPARTON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
28	2300Ω	3.4Ω	180Ω	.6Ω	Part of PC-63000-3	A-3876	T22S45	A-2928	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			SPARTON PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-107		
29	PM	3.4Ω	PC-63000-3	Mod. P5-V		
	CONE DIA.	VC DIA.				
30	4-13/16"	1/2"	NOT READILY REPLACEABLE-USE COMPLETE SPEAKER UNIT			

R F COILS

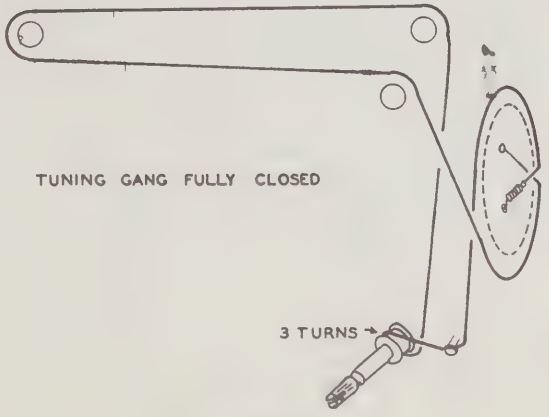
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	SPARTON PART No.	MEISSNER PART No.	
31	Loop Ant.	.1Ω	.8Ω	AB43025-1		
32	Osc. Coil	.6Ω	5.5Ω	AA6797-1	14-1040†	†Add 50MMFD from grid to high side tuning cap.
33	Input IF	10Ω	10Ω	AA6800-12	16-6658	
34	Output IF	8Ω	7Ω	AA6800-2	16-6660	

DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					SPARTON PART No.		
35	Bayonet	6-8	.15A	Brown	PA-4100-2		Type 47

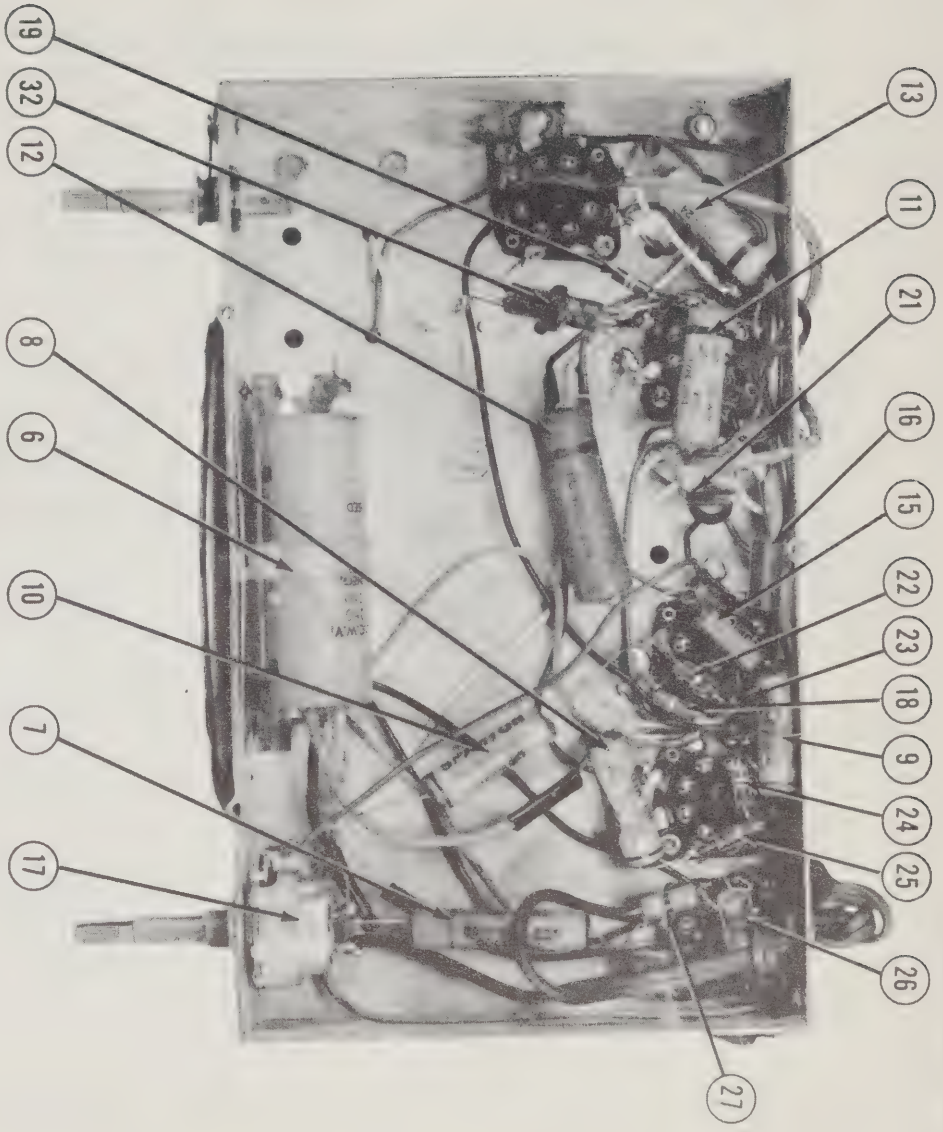
MISCELLANEOUS

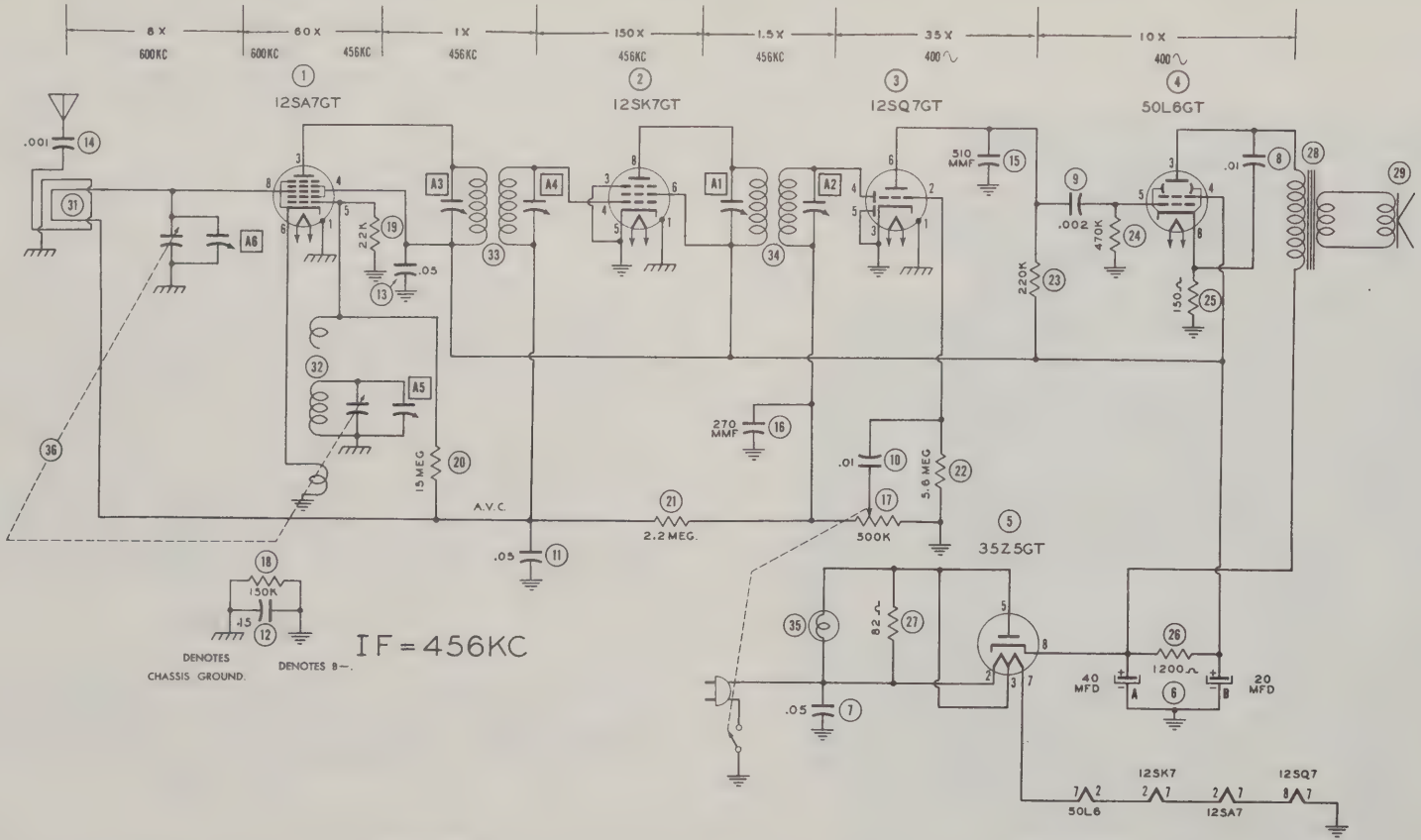
ITEM No.	PART NAME	SPARTON PART No.	NOTES
36	2 Gang Var.Cap.	PB40406	(17-462 MMF, 35-204MMF)
	Knob	PA5601-2	Ivory
	"	PA5601-4	Walnut
	Pointer	PA5402	



DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW





VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	0V.	26VAC	90VDC	90VDC	-6.5VDC§	0V.	13VAC	-.9VDC
2	12SK7GT	0V.	39VAC	0V.	-.9VDC	0V.	90VDC	26VAC	90VDC
3	12SQ7GT	0V.	-.8VDC	0V.	-.6VDC	0V.	58VDC	0V.	13VAC
4	50L6GT	0V.	39VAC	115VDC	90VDC	0V.	0V.	87VAC	6VDC
5	35Z5GT	0V.	117VAC	113VAC	90VDC	113VAC	120VDC	87VAC	120VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	12SA7GT	150KΩ	26Ω	110KΩ	110KΩ	22KΩ	.6Ω	13Ω	2.5 Meg.
2	12SK7GT	150KΩ	38Ω	0Ω	2.5 Meg.	0Ω	110KΩ	26Ω	110KΩ
3	12SQ7GT	150KΩ	6 Meg.	0Ω	470KΩ	0Ω	330KΩ	0Ω	13Ω
4	50L6GT	150KΩ	38Ω	110KΩ	110KΩ	500KΩ	0Ω	90Ω	150Ω
5	35Z5GT	150KΩ	120Ω	115Ω	110KΩ	115Ω	110KΩ	90Ω	110KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-29

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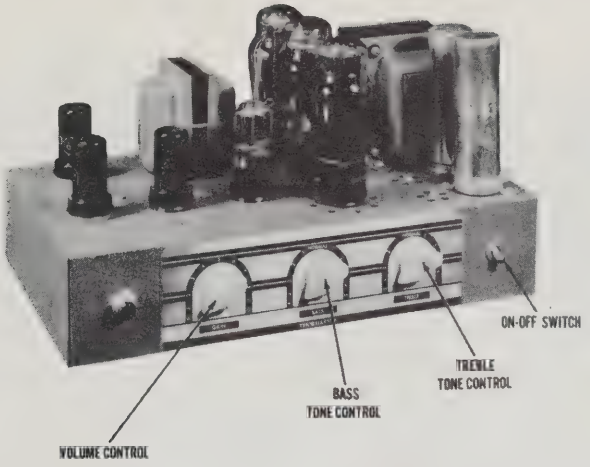
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative and 3-volt battery bias substituted for measurement.

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

THORDARSON MODEL
T-31W10A



THORDARSON MODEL T-31W10A

TRADE NAME	Thordarson, Model T-31W10A
MANUFACTURER	Thordarson Elect. Mfg. Div., Maguire Ind., Inc., 500 W. Huron St., Chicago 10, Ill.
TYPE SET	AC Operated Phono Amplifier
TUBES (SEVEN)	Types, 6SJ7 Mic. Amp., 6SJ7 AF Amp., 6J5 Tone Amp., 6SN7GT AF-Phase Inv., (2) 6B4G Power Output, 5U4G Rectifier.
POWER SUPPLY	110-120 Volts AC — RATING - 1.38 Amp. @ 117 Volts AC

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0V.	3.2VAC	2VDC	0V.	2VDC	40VDC	3.2VAC	57VDC
2	6SJ7	0V.	3.2VAC	1.8VDC	0V.	1.8VDC	60VDC	3.2VAC	115VDC
3	6J5	0V.	3.2VAC	180VDC	0V.	40VDC	0V.	3.2VAC	53VDC
4	6SN7	0V.	165VDC	7.9VDC	0V.	180VDC	7.9VDC	3.2VAC	3.2VAC
5	6B4G	0V.	72VDC*	420VDC	0V.	0V.	0V.	72VDV*	0V.
6	6B4G	0V.	72VDC*	420VDC	0V.	0V.	0V.	72VDC*	0V.
7	5U4G	72VDC	440VDC	0V.	400VAC	0V.	400VAC	430VDC	440VDC

NOTE: READ 6.6 VOLTS AC BETWEEN PINS 2 AND 7 ON TUBES 5 AND 6.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	6SJ7	0Ω	.1Ω	1KΩ	1 Meg.	1KΩ	1 Meg.	.1Ω	260KΩ
2	6SJ7	0Ω	.1Ω	1KΩ	0Ω	1KΩ	270KΩ	.1Ω	60KΩ
3	6J5	0Ω	.1Ω	56KΩ	INF.	230KΩ	INF.	.1Ω	25KΩ
4	6SN7	220KΩ	125KΩ	2.2KΩ	230KΩ	125KΩ	2.2KΩ	.1Ω	.1Ω
5	6B4G	INF.	850Ω	17KΩ	INF.	450KΩ	INF.	850Ω	INF.
6	6B4G	0Ω	850Ω	17KΩ	INF.	450KΩ	INF.	850Ω	INF.
7	5U4G	850Ω	17KΩ	INF.	680Ω	INF.	630Ω	17KΩ	17KΩ

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - All controls at minimum, proper output load connected for measurements.

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DATE 12/47 SET #30 FOLDER #4720-30

PARTS LIST AND DESCRIPTIONS

THORDARSON
MODEL T-31W10A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	INSTALLATION NOTES
		THORDARSON PART No.	STANDARD REPLACEMENT		
1	Mic. Amp.	6SJ7	6SJ7	8N	
2	AF Amp.	6SJ7	6SJ7	8N	
3	Tone Amp.	6J5	6J5	6Q	
4	AF-Phase Inv.	6SN7GT	6SN7GT	8BD	
5	Power Output	6B4-G	6B4-G	5S	
6	Power Output	6B4-G	6B4-G	5S	
7	Rectifier	5U4-G	5U4-G	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	THORDARSON PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	
8	8	600		HS693	D-8-600	AP-86	GL600-8	KR-608	Filter
9A	8	475		TC92	DH-8-525	CL-88	GL475-8-8	KRC588	" - Red
B	8	475		TC92	DH-8-525				" - Red
10	10	450		TC72	M-10-450	UT-12	PRS450-10	BR1045	"
11	10	450		TC72	M-10-450	UT-12	PRS450-10	BR1045	"
12	40	150		TC48	M-40-150	UT-401	PRS150-40	BR4015	Bias Filter
13	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Coupling
14	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	" "
15	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	" "
16	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Tone Comp.
17	.5	200		TP431	SDH-4-5	TC-5	484-.5	DT4P5	" "
18	.0005	600		TP403	S-6-0005	TC-35	684-0005	DT6T5	Cathode Bypass
19	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Audio Coupling
20	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	AF Screen Bypass
21	.1	400		TP428	S-4-1	TC-1	484-.1	DT4P1	Feedback
22	.05	400		TP426	S-4-05	TC-15	484-05	DT4S5	Audio Coupling
23	.1	400		TP428	S-4-1	TC-1	484-01	DT4P1	Mic. Amp. Screen Bypass
24	.01	400		TP421	S-4-01	TC-11	484-01	DT4S1	Mic. Amp. Cathode Bypass

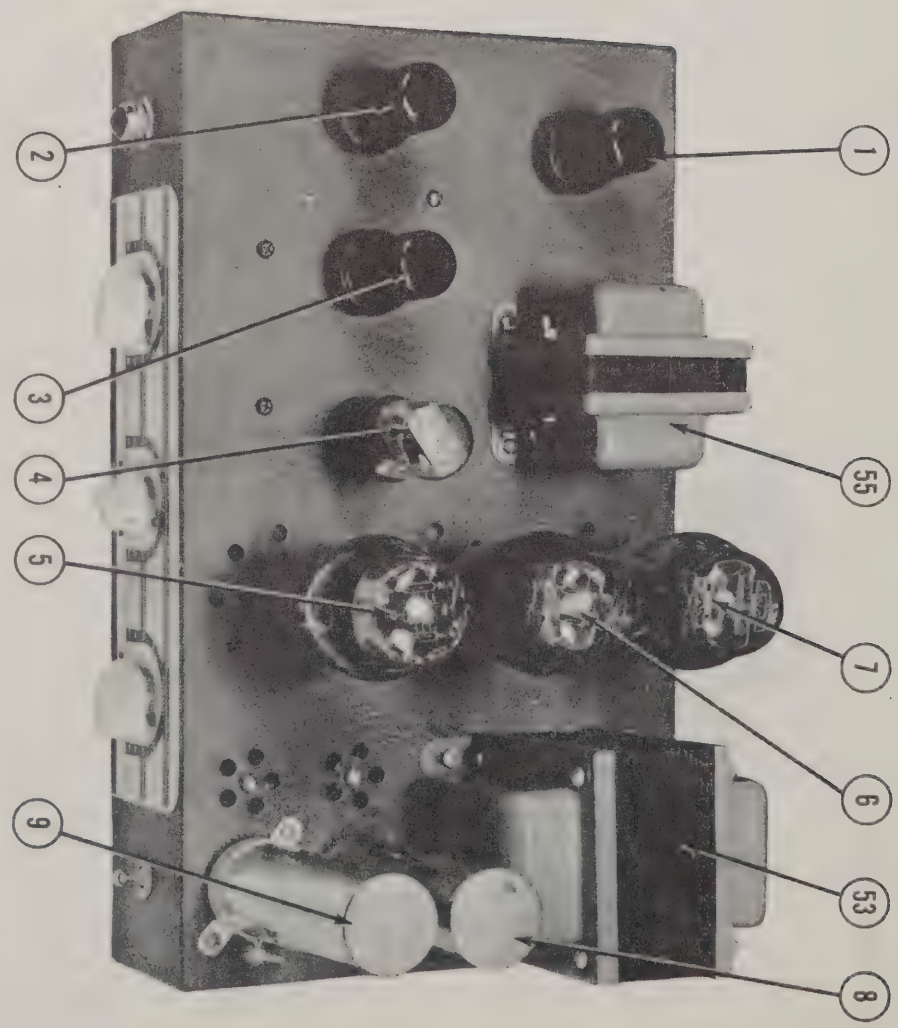
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	THORDARSON PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	
25A	1 Meg.	½		MR53	D13-137	M-63-Z	Audio Gain Control
B	Shaft			Not req.	A	Not Req.	Attach to 25A per instructions
26	40KΩ-INF	1					Treble Control
27	40KΩ-INF	1					Bass Control

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	THORDARSON PART No.	IRC PART No.	
28	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Mic. Amplifier Grid
29	1000Ω	½		BTS-1000	Br.-Blk.-Red Mic. Amplifier Cathode
30	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Mic. Amplifier Cathode Bleeder
31	1 Meg.	½		BTS-1 Meg.	Br.-Blk.-Grn. Mic. Amplifier Screen Dropping
32	220KΩ	½		BTS-220K	Red-Red-Yl. Mic. Amplifier Plate Load
33	22KΩ	½		BTS-22K	Red-Red-Or. Feedback
34	1000Ω	½		BTS-1000	Br.-Blk.-Red 1st AF Cathode
35	220KΩ	½		BTS-220K	Red-Red-Yl. 1st AF Screen Dropping
36	22KΩ	½		BTS-22K	Red-Red-Or. 1st AF Plate Load
37	22KΩ	½		BTS-22K	Red-Red-Or. Filter
38	220KΩ	½		BTS-220K	Red-Red-Yl. Tone Amplifier Grid
39	2200Ω	½		BTS-2200	Red-Red-Red Tone Amplifier Cathode
40	22KΩ	½		BTS-22K	Red-Red-Or. Tone Amplifier Cathode
41	22KΩ	½		BTS-22K	Red-Red-Or. Tone Amplifier Plate Load
42	220KΩ	½		BTS-220K	Red-Red-Yl. 2nd AF Grid
43	2200Ω	½		BTS-2200	Red-Red-Red 2nd AF Cathode
44	100KΩ	½		BTS-100K	Br.-Blk.-Yl. 2nd AF Plate Load

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	THORDARSON PART No.	IRC PART No.	
45	100KΩ	½		BTS-100K	Br.-Blk.-Yl. Phase Inverter Plate Load
46	220KΩ	½		BTS-220K	Red-Red-Yl. Phase Inverter Grid
47	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
48	220KΩ	½		BTS-220K	Red-Red-Yl. Output Grid
49	22KΩ	1		BTA-22K	Red-Red-Or. Filter
50	10KΩ	1		BTA-10K	Br.-Blk.-Or. Filter
51	20KΩ	25		DG-15K	Bleeder
59	850Ω	10		ABA-1000‡	Bias Net.

‡Set slider at 850Ω.

FILTER CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	THORDARSON PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
52	.165A	95Ω	5.5 Henries	T-49809C	C-2309*			

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	THORDARSON PART No.	STANCOR PART No.	THORDARSON PART No.	MERIT PART No.
53	117V AC @ 1.1A	720VCT @ .115A	5.0V AC @ 3.0A	6.2V AC @ 3.0A	T-49810C		T22R32*	P-4004*
				SEC. 4 6.0V CT @ 2.0A				

*Drill new mounting holes.

(TONE) CHOKE

ITEM NO.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D.C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ~	THORDARSON PART NO.	STANCOR PART NO.	THORDARSON PART NO.	MERIT PART No.	
54		200Ω	3.5 Henries	T-40387A		T20C74*		

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		THORDARSON PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
55	5600Ω CT	4Ω 8Ω 15Ω 125Ω 250Ω 500Ω	430Ω CT	.5Ω .65Ω .9Ω 7.4Ω 17.8Ω 27Ω	T-49812A	A-3800*	T22S70*	A-3131*	*Drill new mounting holes.

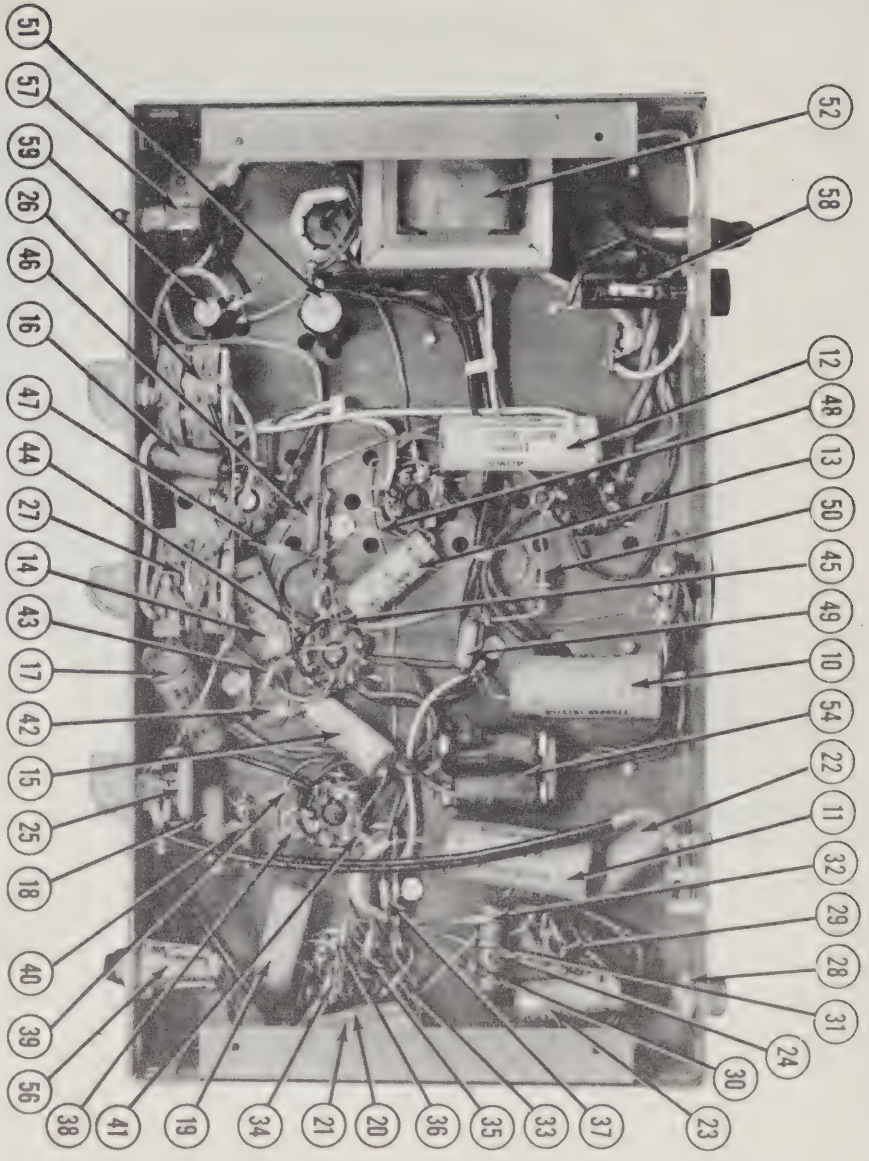
DIAL LIGHT

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		INSTALLATION NOTES
					THORDARSON PART No.		
56	Screw	6-8	0.15	Brown			Type 40

MISCELLANEOUS

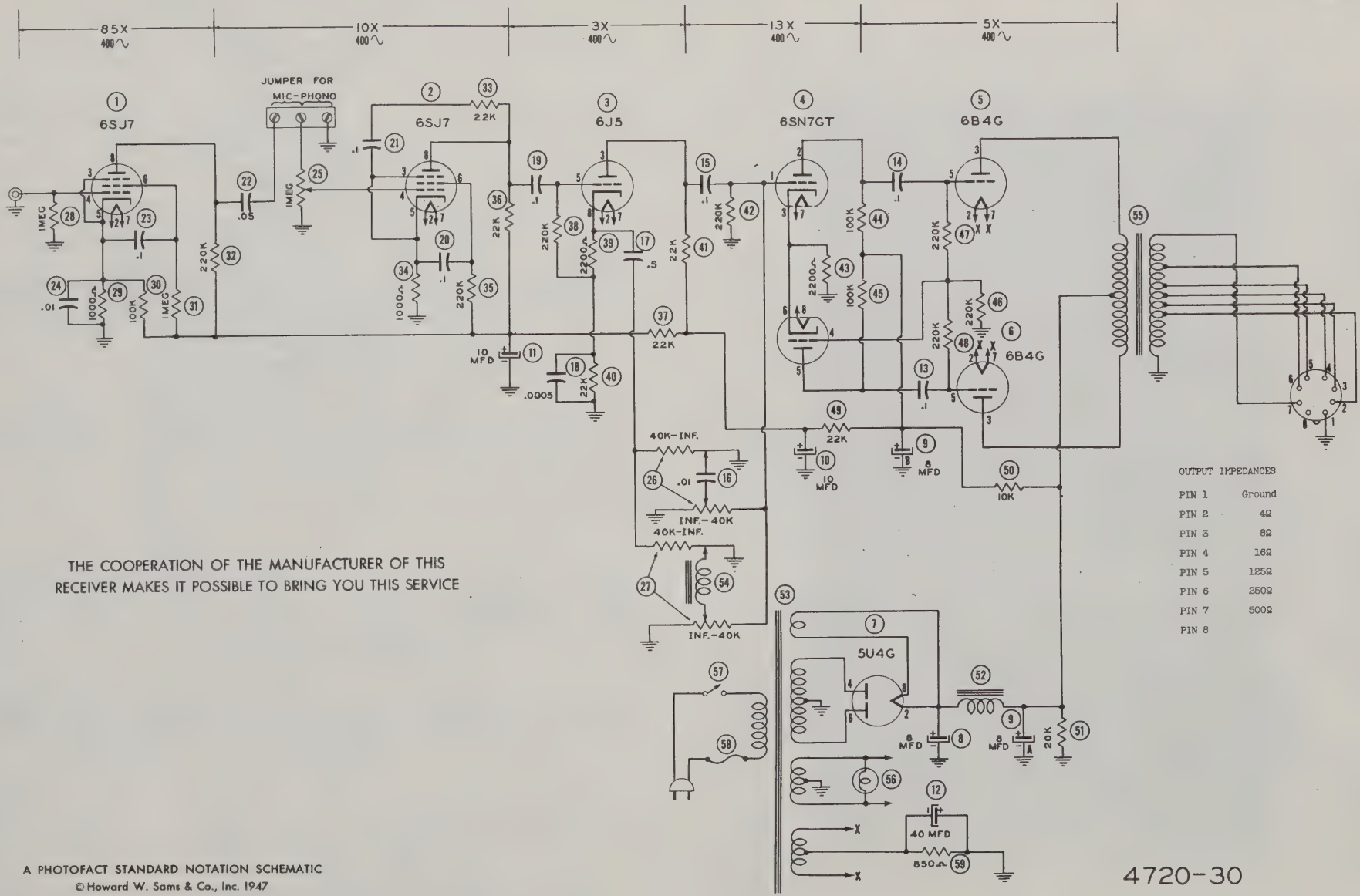
ITEM No.	PART NAME	THORDARSON PART No.	NOTES
57	On-Off Switch		SPST
58	Fuse		3 Amp.

CHASSIS—BOTTOM VIEW



THORDARSON MODEL T-31W10A

THORDARSON MODEL T-31W10A



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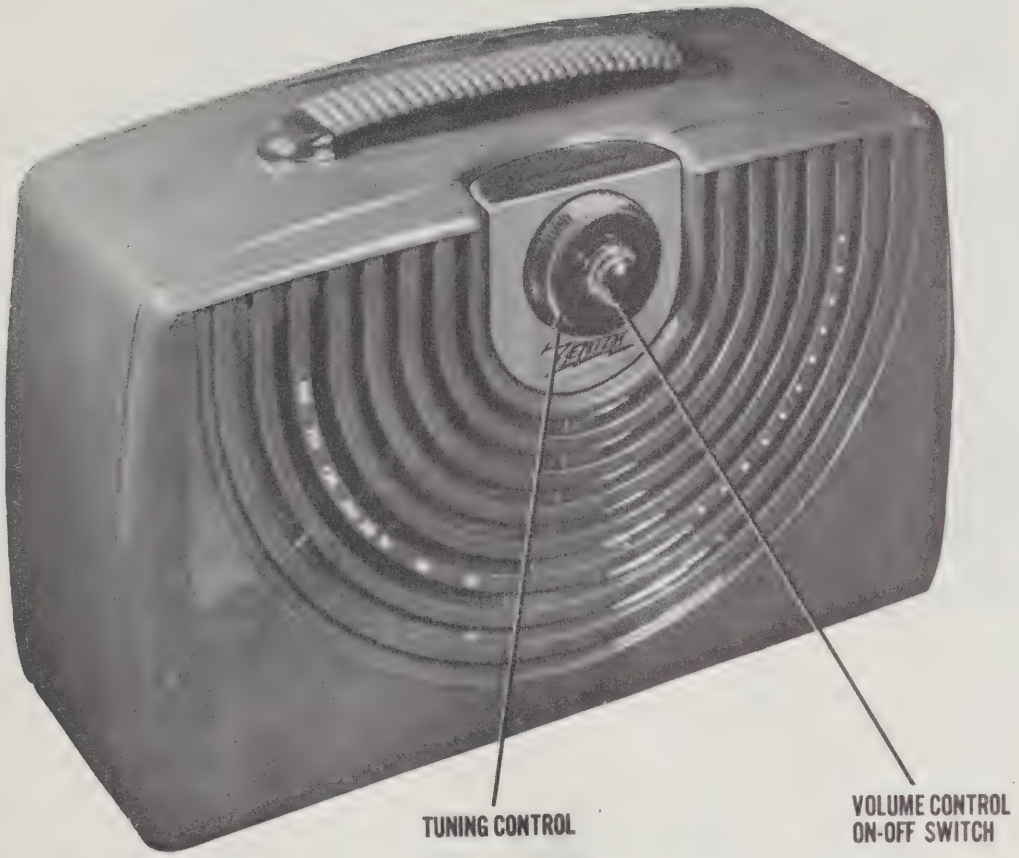
4720-30

PHOTOFACT* Folder
*TRADE MARK

ZENITH MODELS 5G003Z (Ch. 5C40Z), 5G003ZZ (Ch. 5C40ZZ)
BATTERY-LINE OPERATED

ZENITH MODELS 5G003Z (Ch. 5C40Z), 5G003ZZ (Ch. 5C40ZZ) BATTERY-LINE OPERATED



ZENITH MODELS 5G003Z (Ch. 5C40Z), 5G003ZZ (Ch. 5C40ZZ) BATTERY-LINE OPERATED

ZENITH MODEL 5G003ZZ (Ch. 5C40ZZ)

TRADE NAME	Zenith, Models 5G003ZZ (Ch. 5C40ZZ), 5G003Z (Ch. 5C40Z)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Portable Superheterodyne Receiver with Loop Antenna
TUBES (FOUR)	1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 1LB4 Power Output.
POWER SUPPLY RATING	110-120 Volts AC-DC or 6 Volts "A" Supply and 75 Volts "B" Supply in Pack Form .110 Amp. @ 117 Volts AC or 52MA @ 6 Volts DC and 9MA @ 75 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully open and set pointer to reference mark at high freq. end of dial.
Use battery power when available. If AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-. Loop should be maintained in same relative position to chassis as when receiver is in cabinet. Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.5 MFD.	High side to Pin 6 (grid) 1LA6. Low side to B-.	455KC	600KC	Across voice coil	A1,A2, A3,A4.	Adjust for maximum output. If AC power is used without an isolation, transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2		Loop	1600KC	1600KC	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3		"	1400KC	Tune for maximum output.	"	A6	Adjust for maximum output.

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DATE 12/47 SET #30 FOLDER #4720-31

PARTS LIST AND DESCRIPTIONS

ZENITH MODELS 5G003ZZ (Ch. 5C40ZZ), 5G003Z (Ch. 5C40Z) BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LA6	1LA6	7AK	
2	IF Amp.	1LN5	1LN5	7AO	
3	Det.-AVC-AF	1LH4	1LH4	5AG	
4	Power Output	1LB4	1LB4	5AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
5A	40	150	22-1081	FP354†	DY-40-150/20-50	EL-222†	AF44D40A†	UP4015C	■ Filter ▲ Fil. Bypass
6A	20	150	22-1014	FP211	DY-2x20-150	EL-221	AF44D	UP2215	▲ Fil. Bypass
B	20	150							■ "
7	.05	200	22-1017	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
8	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
9	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Fil. Bypass
10	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Pwr. Supply
11	.003	600	22-326	TP406	S-6-003	TC-23	684-003	DT6D3	Output Plate Bypass
12	.01	600	22-196	TP410	S-6-01	TC-11	684-01	DT6D1	Audio Coupling
13	.002	600	22-492	TP405	S-6-002	TC-22	684-002	DT6D2	"
14	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	IF Grid Filter
15	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
16	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Fil. Bypass
17	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass
18	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
19	150	500	22-470	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	AF Plate Bypass
20	100	500	22-162	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid-See Note 1
21	100	500	22-162	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	RF Coupling

Note 1 - Not used in Model 5G003Z. †Parallel sections to obtain desired capacity.

CONTROLS

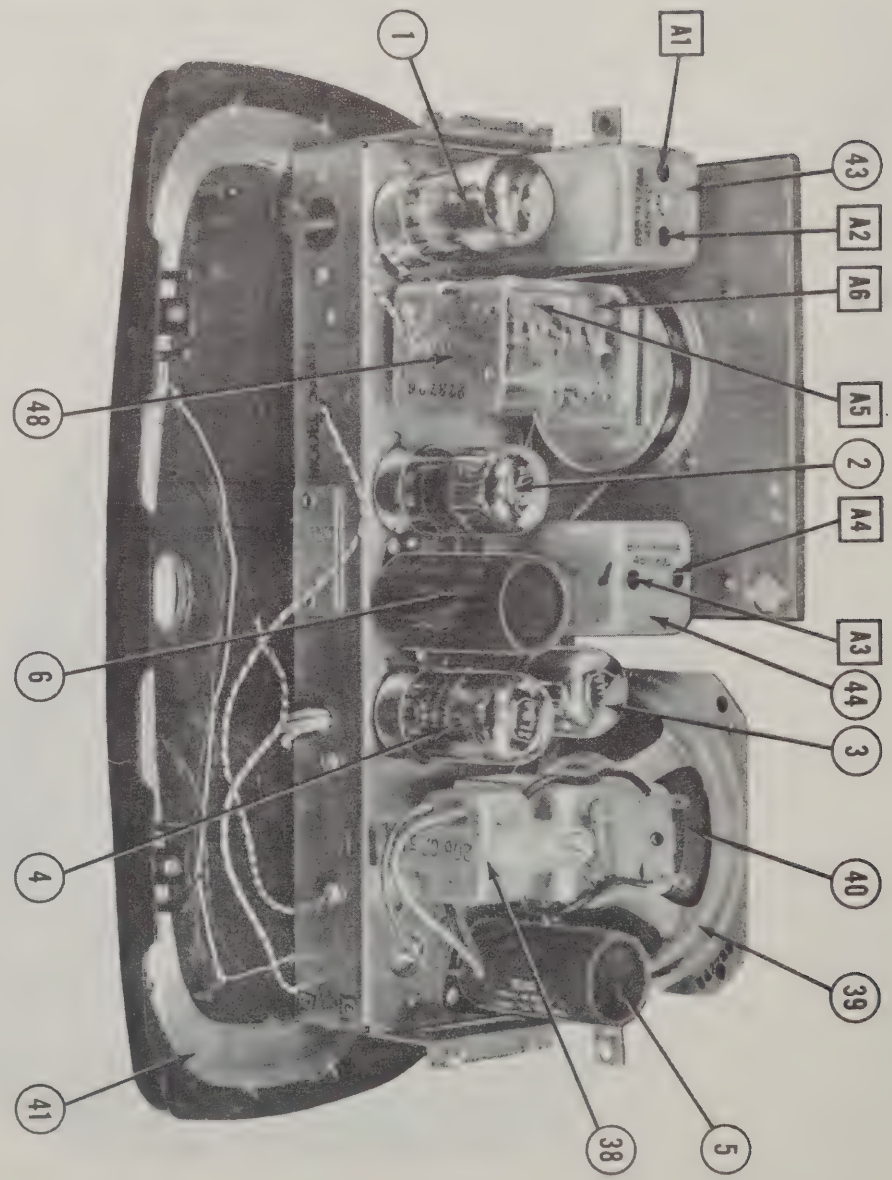
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
22	1 Meg.	½	63-1549				Volume Control & Switch

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
23	180KΩ	¼	63-654	BTS-180K	Br.-Gray-Yl. Oscillator Grid
24	220Ω	¼	63-579	BW-½-220	Red-Red-Br. Parasitic Suppressor-See Note
25	220KΩ	¼	63-296	BTS-220K	Red-Red-Yl. Converter Grid
26	33KΩ	¼	63-646	BTS-33K	Or.-Or.-Or. Converter Screen Dropping
27	4.7 Meg.	¼	63-602	BTS-4.7 Meg.	Yl.-Vi.-Grn. IF Grid
28	2.2 Meg.	¼	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
29	15 Meg.	¼	63-976	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
30	1 Meg.	¼	63-271	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
31	2.2 Meg.	¼	63-600	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
32	820Ω	1	63-1097	BTA-820	Gray-Red-Br. Filament String
33A	100Ω		63-1363	AB-1000	Filament Dropping
B	100Ω			AB-1000	" "
34	33Ω	½	63-1099	BW-½-33	Or.-Or.-Blk. Filament String
35	2700Ω	¼	63-439	BTS-2700	Red-Vi.-Red Filter
36	180Ω	¼	63-627	BW-½-180	Br.-Gray-Br. Bias
37	140Ω		63-1366	AB-150	Rectifier Ballast

Note-Used in Model 5G003Z only.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
38	13000Ω	3.9Ω	620Ω	.8Ω	206-540	A-3856	T22548	A-2932	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-113		
39	PM	3.9Ω	49-540	Mod. P4-X		
	CONE DIA.	VC DIA.				
40	4"	1/2"	208-540			

R F COILS

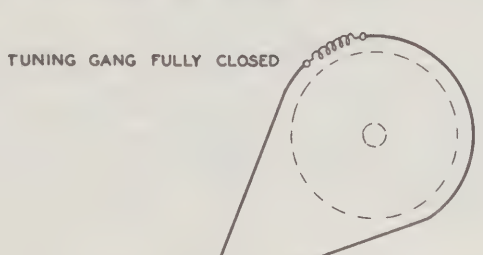
ITEM No.	USE	DC RES.		REPLACEMENT DATA		
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.	
41	Loop Ant.		1.5Ω	24-371		
42A	Osc. Coil	3.5Ω	7Ω	S-11830	14-1040	42A used in model 5G003ZZ
B	Osc. Coil	3.5Ω	7Ω	S-13765	14-1040	43B " " " 5G003Z.(Add 50MMFD
43	Input IF	18Ω	18Ω	95-937	16-6658	from Item 24 to high side tuning cap.)
44	Output IF	18Ω		95-938	16-6670	

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
45	6V "A" 75V "B"	Z-6394				

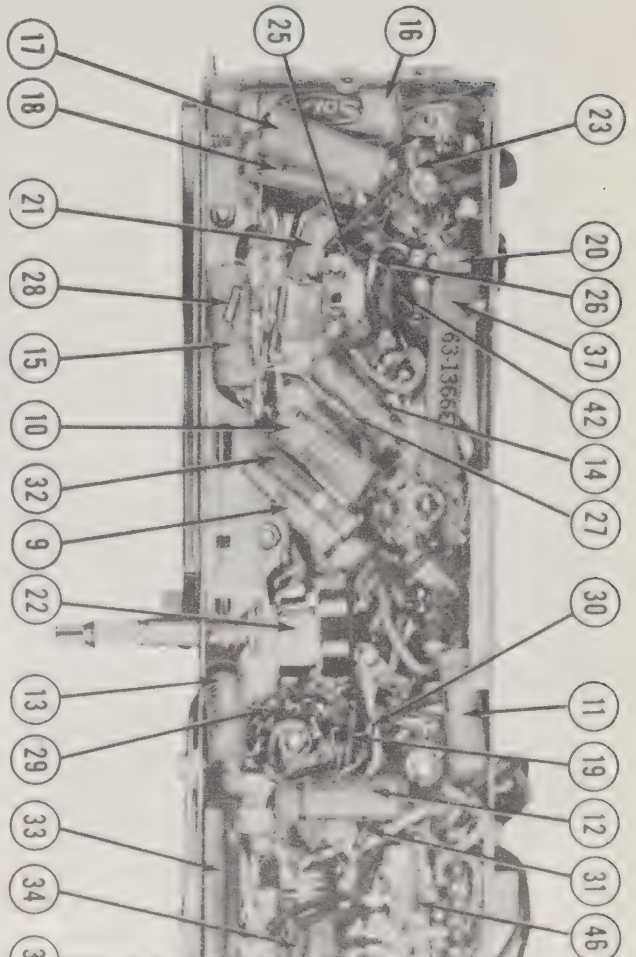
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
46	Switch	85-367	AC-DC-Batt.
47	Rectifier	212-2	Selenium
48A	2 Gang Var. Cap	22-1653	(20-468MMF, 22-152MMF)
B	" " "	22-1450	Used in Model 5G003Z
	Dial Glass	192-99	
	Dial Pointer	59-164	



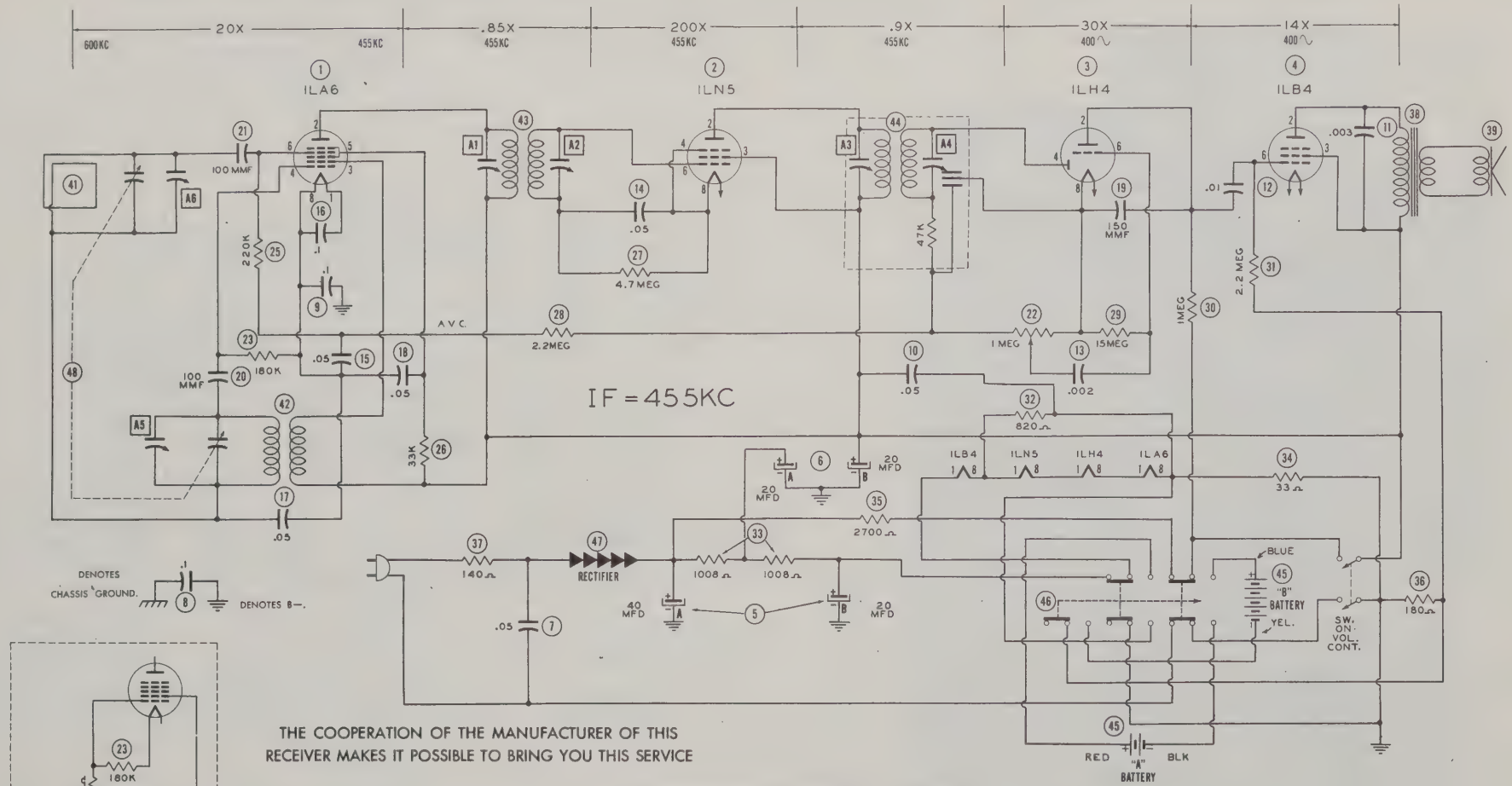
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



DATE 12/47 SET #30 FOLDER #4720-31

ZENITH MODELS 5G003ZZ (Ch. 5C402Z), 5G003Z (Ch. 5C402) BATTERY-LINE OPERATED



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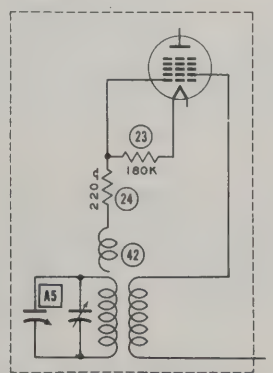

OSCILLATOR CIRCUIT FOR MODEL 5G003Z

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	3.6VDC	80VDC	80VDC	-9VDC§	50VDC	.1VDC	0V.	2VDC
2	1LN5	6.5VDC	80VDC	80VDC	5.1VDC	5.1VDC	.2VDC	106VAC	5.1VDC
3	1LH4	5.1VDC	52VDC	0V.	0V.	.1VDC	.1VDC	3.6VDC	3.6VDC
4	1LB4	7.8VDC	76VDC	80VDC	0V.	0V.	0V.	0V.	6.5VDC

§TAKEN WITH VACUUM TUBE VOLTMETER.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	*	5KΩ	5KΩ	180KΩ	36KΩ	3.5 Meg.	INF.	*
2	1LN5	*	5KΩ	5KΩ	*	*	5 Meg.	200KΩ	*
3	1LH4	*	1 Meg.	INF.	1 Meg.	15 Meg.	15 Meg.	*	*
4	1LB4	*	5.7KΩ	5KΩ	INF.	INF.	2.5 Meg.	INF.	*

*DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE.

RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-31

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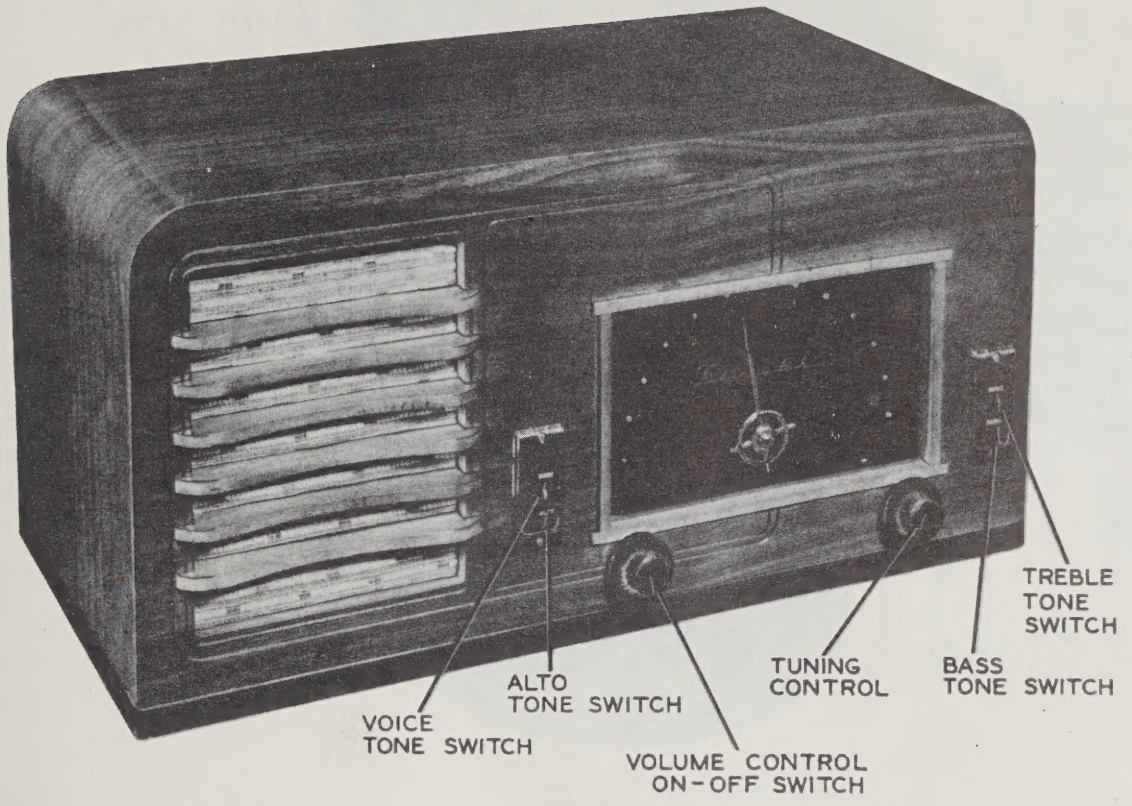
The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by shorting AVC line to B−.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

ZENITH MODEL 5G036
(Ch. 5C51) BATTERY-LINE OPERATED



ZENITH MODEL 5G036
(Ch. 5C51) BATTERY-LINE OPERATED

ZENITH MODEL 5G036 (Ch. 5C51)

TRADE NAME	Zenith, Model 5G036 (Ch. 5C51)
MANUFACTURER	Zenith Radio Corp., 6001 Dickens Ave., Chicago 39, Ill.
TYPE SET	Three Power Operated Superheterodyne Receiver
TUBES (FIVE)	Types, 1LA6 Converter, 1LN5 IF Amp., 1LH4 Det.-AVC-AF, 1LB4 Power Output, 117Z6GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC or 6 Volts DC "A" Supply and 75 Volts DC "B" Supply in Pack Form
POWER SUPPLY	.160 Amp. @ 117 Volts AC or 51MA @ 6 Volts DC and 10MA @ 75 Volts DC
TUNING RANGE—BROADCAST	535-1620KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning cap. fully closed and set pointer to last reference mark at low freq. end of dial.

Use battery power when available. IF AC power is used, use an isolation transformer when available. If not, connect a .1 MFD capacitor in series with low side of the signal generator and B-.

Volume control should be at maximum position, output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1	.5 MFD.	High side to Pin 6 (grid) 1LA6. Low side to B-.	455KC	600KC	Across voice coil	A1,A2, A3,A4	Adjust for maximum output. If AC power is used without an isolation transformer reduce dummy ant. to 200MMF to reduce hum modulation.
2	200MMFD	High side to ext. ant. lead (blue). Low side to ext. ground lead (black).	1600KC	1600KC	"	A5	Adjust for maximum output.
3	200MMFD	"	1400KC	Tune for maximum output.	"	A6	" " " "

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DATE 12/47 SET #30 FOLDER #4720-32

PARTS LIST AND DESCRIPTIONS

ZENITH MODEL 5G036 (Ch. 5C1)
BATTERY-LINE OPERATED

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ZENITH PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
1	Converter	1LA6	1LA6	7AK	
2	IF Amp.	1LN5	1LN5	7AO	
3	Det.-AVC-AF	1LH4	1LH4	5AG	
4	Power Output	1LB4	1LB4	5AD	
5	Rectifier	117Z6GT	117Z6GT	7Q	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	SOLAR PART No.	SPRAGUE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
6A	40	150	22-1026	FP306†	DY-4020-150	EL-24	AF444D*	UP4215	■ Filter
B	20	150							▲ "
7A	20	150	22-1027	FP217	DY-2x20-150	EL-22	AF44D	UP2045C	■ "
B	20	25							▲ Filament Bypass
8	.002	600	22-492	TP405	S-6-002	TC-22	684-002	DT6D2	Output Plate Bypass
9	.01	600	22-196	TP410	S-6-01	TC-11	684-01	DT6S1	Audio Coupling
10	.002	600	22-492	TP405	S-6-002	TC-22	684-002	DT6D2	" "
11	.004	600	22-448	TP407	S-6-004	TC-24	684-004	DT6D4	Tone Compensation
12	.002	600	22-492	TP405	S-6-002	TC-22	684-002	DT6D2	" "
13	.001	600	22-887	TP404	S-6-001	TC-21	684-001	DT6D1	" "
14	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	RF Bypass Power Supply
15	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Filament Bypass
16	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	" "
17	.1	200	22-827	TP428	S-4-1	TC-1	484-.1	DT4P1	Line Isolation
18	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	Conv. Screen Bypass
19	.05	200	22-829	TP426	S-4-05	TC-15	484-05	DT4S5	AVC Filter
20	.01	400	22-1183	TP421	S-4-01	TC-11	484-01	DT4S1	Ext. Ant. Isolation
21	.05	400	22-1017	TP426	MPH-4-05	TC-15	484-05	DT4S5	Line Filter
22	250	500	22-182	MC240	MO.5-325	1FM-325	1468-00025	5W5T25	Tone Compensation
23	150	500	22-470	MC236	MO.5-315	1FM-315	1468-00015	5W5T15	AF Plate Bypass
24	100	500	22-162	MC235	MO.5-31	1FM-31	1468-0001	5W5T1	Osc. Grid Capacitor
25	5	500	22-303	MC205	MO.5-55	MS-55	1468-000005	5W5V5	Fixed Trimmer
26	5	500	22-303	MC205	MO.5-55	MS-55	1468-000005	5W5V5	" "

*Parallel sections to obtain desired capacity. †Do not use bypass section.

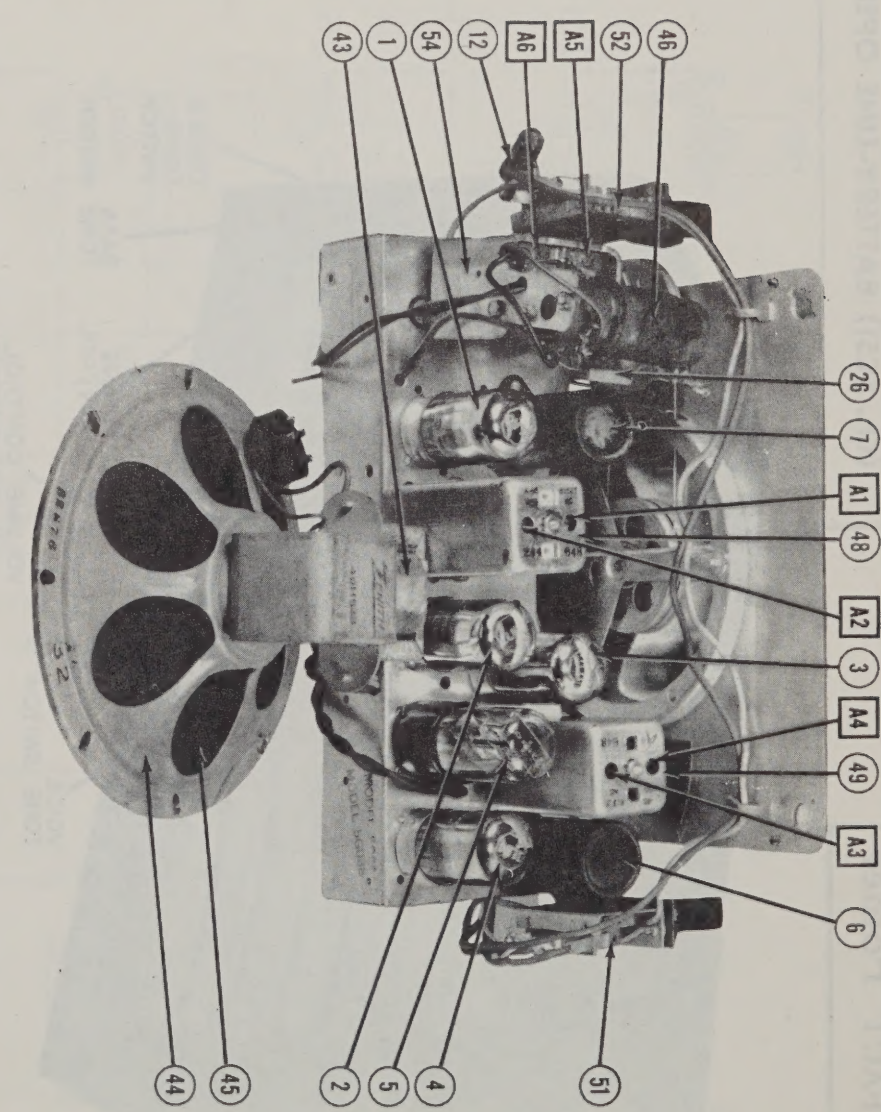
CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	MALLORY PART No.	IRC PART No.	CLAROSTAT PART No.	INSTALLATION NOTES
27A	1 Meg.	½	63-1236	TM243	D19-137X	AT-112	Volume Control tapped @ 500KΩ
B	Shaft		Not Req.	SS25	E	KSS-3	Attach to 27A per instructions
C	Switch		" "	M27	42	SW-A2	" " " " "

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: ZENITH PART No.	IRC PART No.	IDENTIFICATION CODES
28	180KΩ	½	63-654	BTS-180K	Br.-Gray-Yl. Oscillator Grid
29	33KΩ	½	63-646	BTS-33K	Or.-Or.-Or. Converter Screen
30	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. AVC Network
31	68KΩ	½	63-594	BTS-68K	Blue-Gray-Or. Tone Compensation
32	4700Ω	½	63-587	BTS-4700	Yl.-Vi.-Red Filament String
33	4700Ω	½	63-587	BTS-4700	Yl.-Vi.-Red " "
34	15 Meg.	½	63-976	BTS-15 Meg.	Br.-Grn.-Blue AF Grid
35	1 Meg.	½	63-271	BTS-1 Meg.	Br.-Blk.-Grn. AF Plate Load
36	2.2 Meg.	½	63-600	BTS-2.2 Meg.	Red-Red-Grn. Output Grid
37	140Ω	2	63-1366	BW-2-130	Surge Limiter
38A	1008Ω		63-1465	AB-1000	Filament Dropping
B	1008Ω			AB-1000	" "
39	2700Ω	½	63-439	BTS-2700	Red-Vi.-Red Filter
40	180Ω	½	63-627	BW-½-180	Br.-Gray-Br. Bias
41	820Ω	1	63-1558	BTA-820	Gray-Red-Br. Filament String
42	33Ω	½	63-1099	BW-½-33	Or.-Or.-Blk. " "

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		ZENITH PART No.	STANCOR PART No.	THORDAR'N PART No.	MERIT PART No.	
	PRI.	SEC.	PRI.	SEC.					
43	13000Ω	3.7Ω	610Ω	.3Ω	206-523	A-3823	T22S87	A-2901	

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			INSTALLATION NOTES
			ZENITH PART No.	JENSEN PART No.		
	FIELD	VC IMP.		ST-110		
44	PM	3.7Ω	49-523	Mod. P6-V		
	CONE DIA.	VC DIA.				
45	6"	11/16"	208-523			

R F COILS

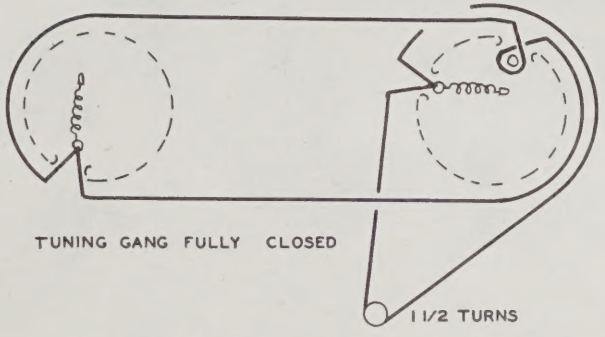
ITEM No.	USE	DC RES.		REPLACEMENT DATA	
		PRI.	SEC.	ZENITH PART No.	MEISSNER PART No.
46	Ant. Coil	24Ω	4.1Ω	S-11960	14-1026
47	Osc. Coil	6.3Ω	3.1Ω	S-12505	14-1040
48	Input IF	20Ω	19Ω	95-816	
49	Output IF	18.5Ω		95-817	16-6670

BATTERIES

ITEM No.	VOLTAGE	ZENITH PART No.	EVEREADY			INSTALLATION NOTES
			"A"	"B"	"A-B"	
50	6V "A" 75V "B"	Z682				

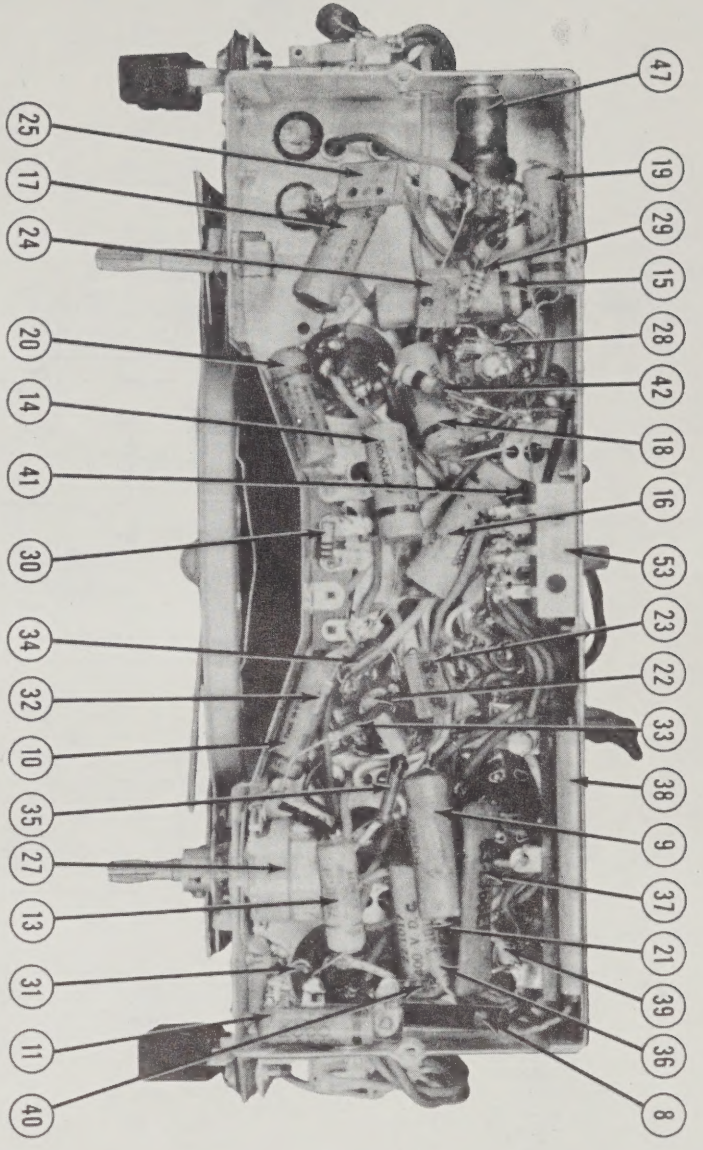
MISCELLANEOUS

ITEM No.	PART NAME	ZENITH PART No.	NOTES
51	Switch	85-284	Voice-Alto
52	"	85-288	Treble-Bass
53	"	85-254	Power Change Over
54	2 Gang Var.Cap.	22-1216	(30-193MMF, 15-462MMF)



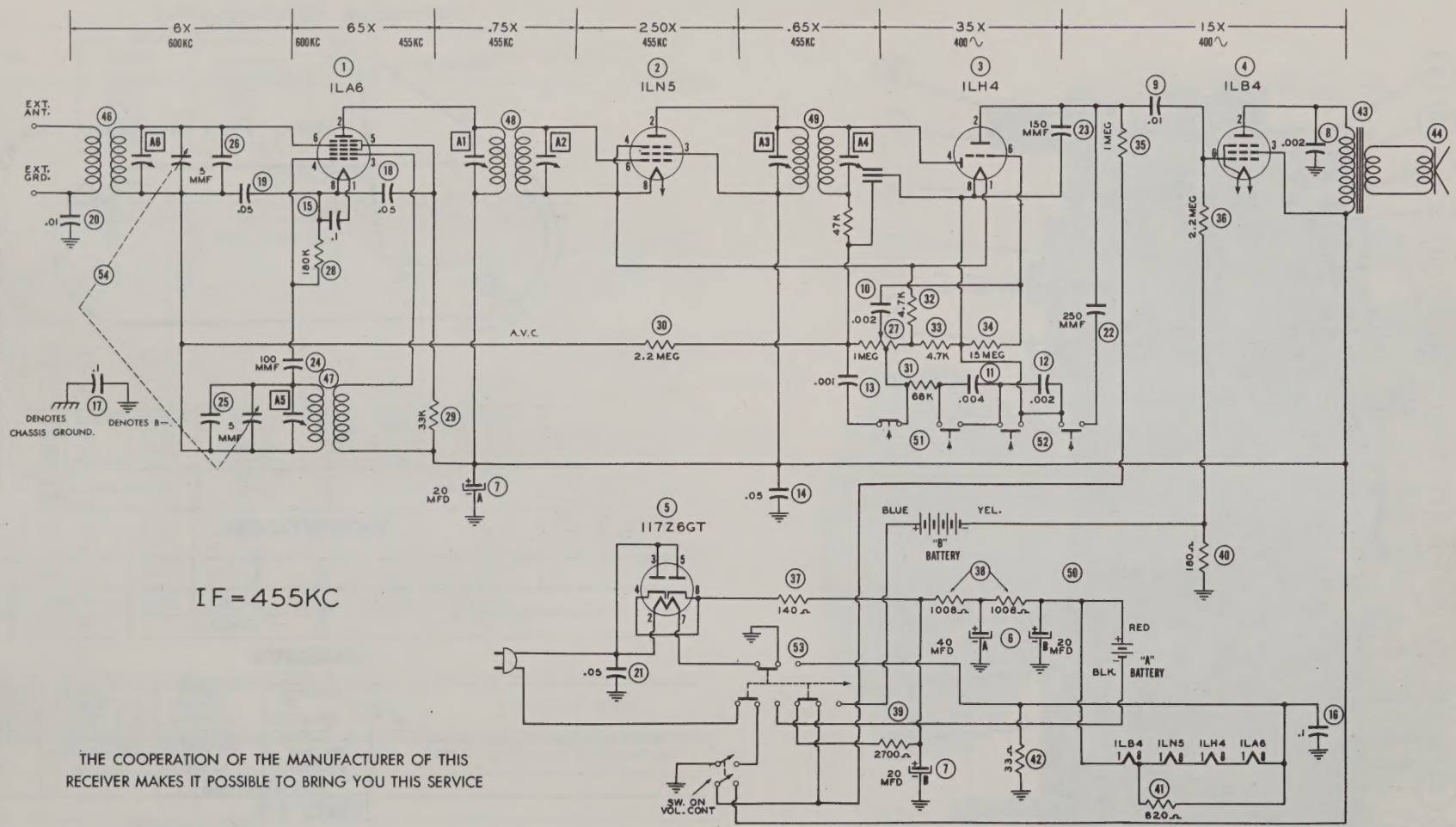
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



ZENITH MODEL 5G036 (Ch. 5C51)
BATTERY-LINE OPERATED

ZENITH MODEL 5G036 (Ch. 5C51)
BATTERY-LINE OPERATED



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

VOLTAGE AND RESISTANCE READINGS TAKEN IN AC-DC POSITION.

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	3.4VDC	75VDC	75VDC	-6.4VDC§	47VDC	.2VDC	1.8VDC	1.8VDC
2	1LN5	6.2VDC	75VDC	75VDC	4.8VDC	4.8VDC	4.8VDC	0V.	4.8VDC
3	1LH4	4.8VDC	47VDC	0V.	.7VDC	0V.	0V.	0V.	3.4VDC
4	1LB4	7.5VDC	72VDC	75VDC	0V.	0V.	0V.	75VDC	6.2VDC
5	117Z6GT	0V.	117VAC	117VAC	110VDC	117VAC	0V.	0V.	110VDC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
1	1LA6	*	4.8KΩ	4.8KΩ	180KΩ	38KΩ	3.3 Meg.	*	*
2	1LN5	*	4.8KΩ	4.8KΩ	*	*	75Ω	INF.	*
3	1LH4	*	1 Meg.	INF.	1 Meg.	INF.	15 Meg.	0Ω	*
4	1LB4	*	5.2KΩ	4.8KΩ	0Ω	170Ω	2.5 Meg.	4.8KΩ	*
5	117Z6GT	INF.	250Ω	250Ω	2.2KΩ	250Ω	INF.	0Ω	2.2KΩ

§TAKEN WITH VACUUM TUBE VOLTMETER.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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RESISTANCE READINGS IN THE B+ CIRCUITS MAY VARY WIDELY ACCORDING TO THE CONDITION OF THE FILTER CAPACITORS

4720-32

The stage gain measured values listed above are approximate values for an average operative stage, rather than an absolute value. It should be borne in mind that it is possible to introduce so many variables into the measurement operation, such as, type of equipment used for measuring, handling and placement of probes, the accuracy of alignment, etc., that an absolute reading is impractical. AVC is made inoperative by connecting jumper from high side of volume control to low side.

1 - DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.